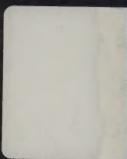


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THE CANADIAN INDUSTRIAL FIELD

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CHAPTER VII XI

(18)

TRANSPORTATION  
IN CANADA



Issued by  
THE DEPARTMENT OF TRADE AND COMMERCE  
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Chap. VII - XI  
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## TRANSPORTATION IN CANADA

### 1. RAILWAYS

Canada has an aggregate area of 3,684,723 square miles or more than one quarter of the total area of the British Empire and is nearly three quarters of a million square miles larger than continental United States. Its least distance by rail from Halifax on the Atlantic to Vancouver on the Pacific is 3,494 miles.

It has nearly 10 millions of population and is covered by a network of railway trackage of more than 41,000 miles, over which were carried in 1929 some 39,000,000 people and over 137 million tons of freight, with aggregate net earnings of over \$101,000,000. The number of passengers carried one mile was approximately 3,000,000,000. The total second and industrial tracks, yard tracks and sidings amounts to over 14,000 miles, making a grand total of all tracks of over 55,000 miles. New branch lines are graded, new tracks and heavier steel laid out and a development program commensurate with the economic needs of the country is prosecuted with vigour every year.

This vast system of Canadian trackage is almost wholly operated by two of the largest railway organizations in the world, i.e., The Canadian Pacific Railway and the Canadian National Railways. These two railway organizations serve all the principal cities and seaports of the Dominion, providing transportation facilities for the agricultural and industrial products of the various parts of the country. They maintain excellent freight and express services, making it unnecessary for dealers and jobbers to carry large stocks. They also operate inland and ocean steamship lines and conduct their own telegraph and hotel systems. Both railways have offices and agents in all the principal cities of the world.

The Canadian National system operates at present 21,563 miles of lines and carried in 1929, 55,338,665 tons of freight and 18,794,446 passengers. The Canadian Pacific Railway has a railway network of 14,812 miles and carried in 1929, 38,221,961 tons of freight and 12,639,633 passengers.

## 2. FREIGHT RATES

The first consideration before fixing freight rates is a classification of the freight into a number of groups according to type of commodity. In Canada this classification places the various commodities in ten groups plus additional groups based on multiples of the first class rate. The only difference existing in different parts of the country is that pertaining to mixed car loads—the rule in the western district being confined to trade lists while that in the east is not so restricted. Class rates which are applied in conjunction with the classification apply on the movement of finished or semi-finished products. The movement of more or less raw materials and some semi-finished articles is largely on what are known as commodity rates—these being special rates applicable to a particular commodity or group of commodities between respective points specified in the tariffs. In determining what rating or group in the classification a commodity will be placed, consideration is given to such factors as value, car space, packing, susceptibility to damage and various other conditions. The Canadian Freight Association handles the classification lists for the railways subject to the approval of the Board of Railway Commissioners. Classification lists are revised from time to time and must be advertised.

Factors taken into consideration in establishing freight rates are similar to those of classification with the addition of cost of service comprising terminal and road haulage charges. Competition between railroads, highways and water systems is also taken into consideration. In general Canadian freight rates are on a most favourable basis and the average revenue per ton mile is practically the lowest in the world.

In 1929 there were 137,855,151 tons of freight carried with receipts per ton hauled of \$2.79. The average length of freight haul was 304 miles, and the average train load 523 tons net.

### Board of Railway Commissioners

The government control of transportation in Canada is vested in the Board of Railway Commissioners which has jurisdiction in matters relating to the location, construction and general operation

**RAILWAY MAP  
OF  
SOUTHEASTERN CANADA**

Scale 100 miles to one inch

#### LEGEND

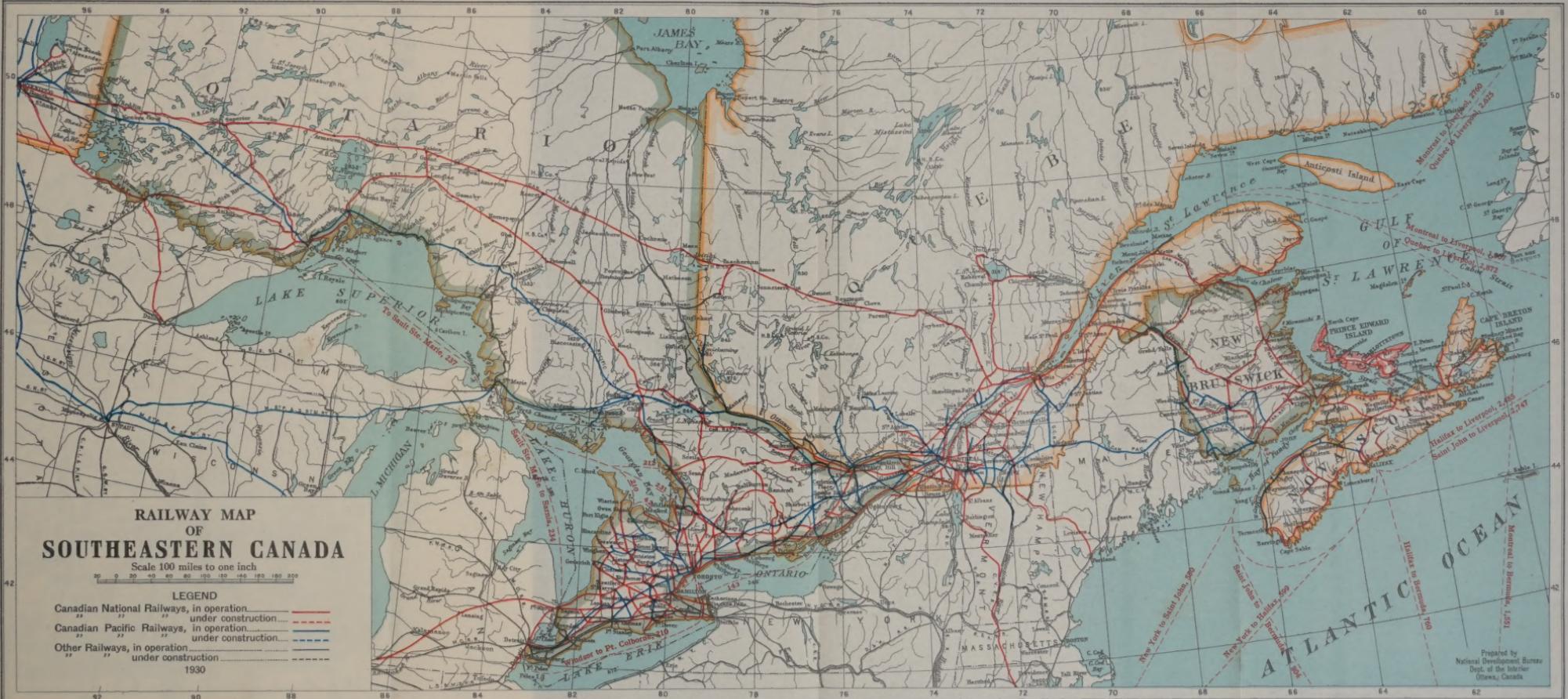
Canadian National Railways, in operation \_\_\_\_\_

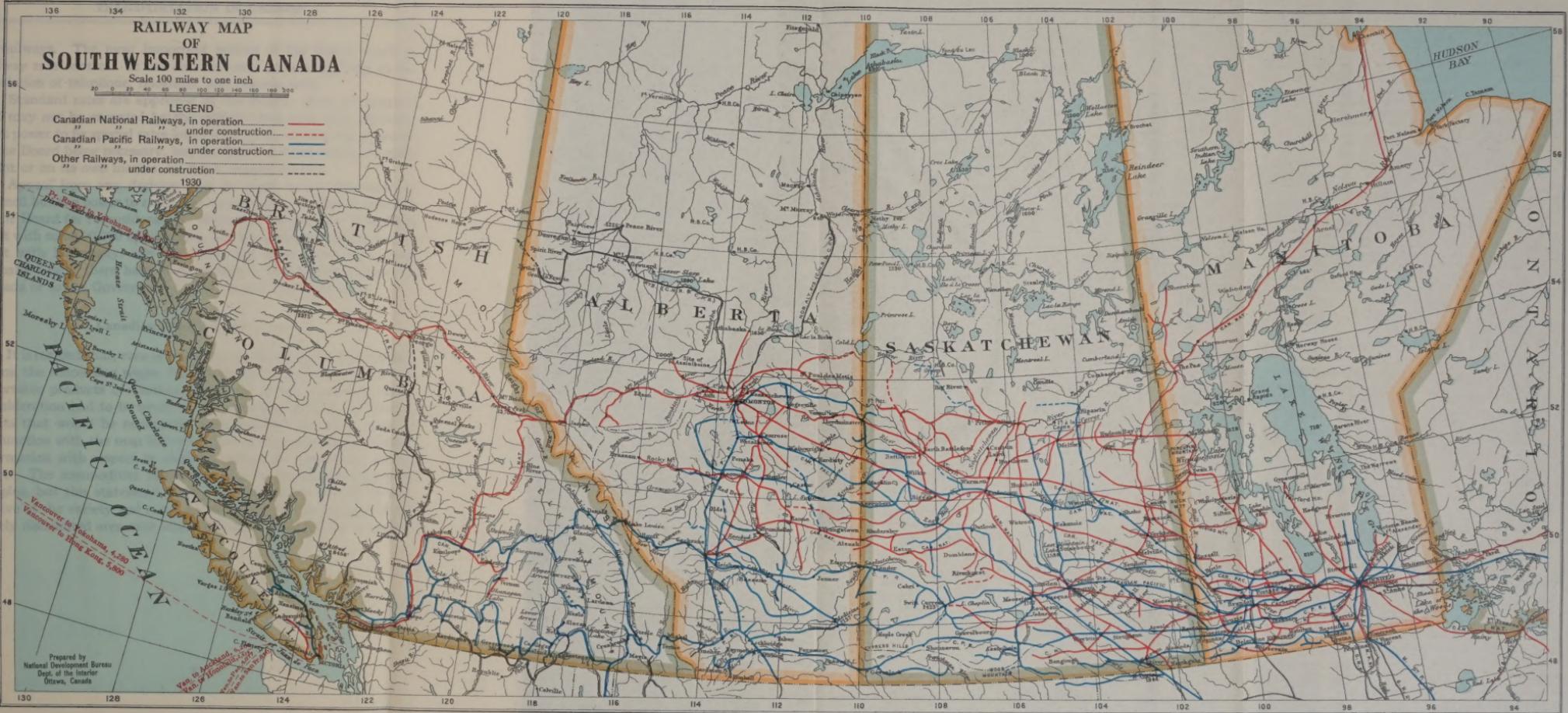
**Canadian Pacific Railways** under construction...  
in operation.

**Canadian Pacific Railways**, in operation.....  
33 " " under construction.....

Other Railways, in operation \_\_\_\_\_  
" " under construction \_\_\_\_\_

1930





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## TRANSPORTATION IN CANADA

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of railways. The most important powers of the Board relate to railway rate control. It has also narrower powers applying to the regulation of telephone, telegraph, and express rates.

Standard rates are approved by the Board; these are maxima and may not be exceeded by the railway companies who, however, have power to fix special rates lower than these, without the approval of the Board being necessary, but the Board has the power, on complaint or on its own motion, to direct charges therein.

Appeal from any decision may be made to the Governor in Council but the power to rescind or vary usually consists in referring to the Board for reconsideration. Since 1904 to date, the Board has dealt with some 90,000 applications, and the great bulk of these were dealt with informally. Of the 9,000 odd cases which have been formally heard, there have been appeals to the Supreme Court of Canada or to the Governor in Council in less than 1 per cent.

### Canadian Export Freight Rates

It is realized that, even in a chart so extensive as the one appearing on the succeeding pages, full justice cannot be done to all the exportable products of Canada nor to all places producing them. Consideration had to be given to the matter of getting production points that would be reasonably representative and when used in conjunction with the map following this chart would convey similar information with respect to shipping points not mentioned on the chart. The commodities mentioned may be considered simply as samples, but this statement of exportable products should be suggestive of the variety and range of production in Canada and of the widely distributed area over which Canada's industrial life is spread.

# THE CANADIAN INDUSTRIAL FIELD

## STATEMENT OF RAILWAY FREIGHT RATES ON A NUMBER OF THE PRINCIPAL COMMODITIES PORTS OF

Rates are in dollars and cents per hundred

TO PORTS OF EXPORT

| Commodity                                   | From producing point              | MONTREAL, QUE.     |  |                           | QUEBEC, QUE.       |  |                           |
|---|-----------------------------------|--------------------|--|---------------------------|--------------------|--|---------------------------|
|   |                                   | Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port | Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port |
|   |                                   | Lbs.               |  |                           | Lbs.               |  |                           |
| Agricultural implements, carload.           | Woodstock, N.B.....               | \$ .51             | 30,000   | 454                       | \$ .49½            | 30,000   | 476                       |
|   | St. André de Kamouraska, Que..... | .37                | 30,000   | 257                       | .27                | 30,000   | 118                       |
|   | Smiths Falls, Ont.....            | .27                | 30,000   | 134                       | .32½               | 30,000   | 295                       |
|   | Peterborough, Ont.....            | .35                | 30,000   | 268                       | .37½               | 30,000   | 429                       |
|   | Aurora, Ont.....                  | .31                | 30,000   | 364                       | .41                | 30,000   | 532                       |
|   | Toronto, Ont.....                 | .31                | 30,000   | 334                       | .31                | 30,000   | 503                       |
|   | Hamilton, Ont.....                | .31                | 30,000   | 373                       | .32½               | 30,000   | 542                       |
|   | Elora, Ont.....                   | .32                | 30,000   | 397                       | .32½               | 30,000   | 577                       |
|   | Brantford, Ont.....               | .31                | 30,000   | 394                       | .31½               | 30,000   | 562                       |
|   | St. Marys, Ont.....               | .39                | 30,000   | 434                       | .39                | 30,000   | 602                       |
| Alloys, ferro, carloads....                 | Welland, Ont.....                 | .37½               | 36,000   | 414                       | .37½               | 36,000   | 582                       |
| Alloys, Cobalt, carloads...                 | St. Catharines, Ont.....          | .37½               | 36,000   | 399                       | .37½               | 36,000   | 569                       |
|   | Deloro, (Marmora) Ont.....        | .34                | 36,000   | 256                       | .36½               | 36,000   | 428                       |
| Angle bars, steel, carloads.                | Sydney, N.S.....                  | .37                | 40,000   | 956                       | .31                | 40,000   | 818                       |
|   | Montreal, Que.....                |                    | 40,000   | —                         | .15                | 36,000   | 172                       |
|   | Hamilton, Ont.....                | .37½               | 36,000   | 373                       | .37½               | 36,000   | 542                       |
|   | Sault Ste. Marie, Ont.....        | .45                | 36,000   | 623                       | .58                | 36,000   | 770                       |
| Automobiles, passenger, carloads.           | Oshawa, Ont.....                  | .60                | 15,000   | 301                       | .60                | 15,000   | 469                       |
|   | Toronto, Ont.....                 | .60                | 15,000   | 334                       | .60                | 15,000   | 503                       |
|   | Windsor, Ont.....                 | .80                | 15,000   | 555                       | .80                | 15,000   | 724                       |
|   | Ford, Ont.....                    | .80                | 15,000   | 558                       | .80                | 15,000   | 727                       |
| Beer, carloads.....                         | Saint John, N.B.....              | .48                | 26,000   | 488                       | .44                | 26,000   | 497                       |
|   | Montreal, Que.....                |                    | —  | —                         | .15                | 30,000   | 172                       |
|   | Toronto, Ont.....                 | .37½               | 30,000   | 334                       | .37½               | 30,000   | 503                       |
|   | Kitchener, Ont.....               | .37½               | 30,000   | 397                       | .37½               | 30,000   | 565                       |
| Bicycles and joycycles, less than carloads. | Weston, Ont.....                  | 1.30               | —  | 343                       | 1.30               | —  | 511                       |
| Box shooks, carloads.....                   | Toronto, Ont.....                 | .19½               | 40,000   | 334                       | .19½               | 40,000   | 503                       |
|   | New Westminster, B.C.....         | .90                | 50,000   | 2,874                     | .90                | 50,000   | 2,892                     |
| Breakfast foods and cereals, carloads.      | Peterborough, Ont.....            | .20                | 50,000   | 284                       | .21                | 50,000   | 453                       |
|   | Niagara Falls, Ont.....           | .21                | 50,000   | 411                       | .21                | 50,000   | 579                       |
|   | London, Ont.....                  | .21½               | 50,000   | 445                       | .21½               | 50,000   | 614                       |
|   | Windsor, Ont.....                 | .23½               | 50,000   | 555                       | .23½               | 50,000   | 724                       |
| Brushes, less than carloads                 | Saint John, N.B.....              | .81                | —  | 488                       | .74                | —  | 497                       |
|   | Montreal, Que.....                |                    | —  | —                         | .30                | —  | 172                       |
|   | Morrisburg, Ont.....              | .54                | —  | 93                        | .70                | —  | 265                       |
|   | Toronto, Ont.....                 | .79                | —  | 334                       | .79                | —  | 503                       |
|   | Hamilton, Ont.....                | .82½               | —  | 373                       | .82½               | —  | 542                       |
|   | Port Elgin, Ont.....              | 1.08               | —  | 481                       | 1.08               | —  | 650                       |
| Butter, carloads.....                       | Montreal, Que.....                | —                  | 20,000   | —                         | .22½               | 20,000   | 172                       |
|   | Peterborough, Ont.....            | .60                | 20,000   | 284                       | .60                | 20,000   | 453                       |
|   | Toronto, Ont.....                 | .60                | 20,000   | 334                       | .60                | 20,000   | 503                       |
|   | Hamilton, Ont.....                | .62                | 20,000   | 372                       | .62                | 20,000   | 542                       |
|   | Calgary, Alta.....                | 2.46               | 50,000   | 2,721                     | 2.46               | 50,000   | 2,215                     |
|   | Edmonton, Alta.....               | 2.46               | 50,000   | 2,148                     | 2.46               | 50,000   | 2,142                     |
|   | Prince Albert, Sask.....          | 2.28               | 50,000   | 1,876                     | 2.28               | 50,000   | 1,870                     |
|   | Saskatoon, Sask.....              | 2.20               | 50,000   | 1,825                     | 2.20               | 50,000   | 1,819                     |
|   | Moose Jaw, Sask.....              | 2.10               | 50,000   | 1,752                     | 2.10               | 50,000   | 1,746                     |
|   | Regina, Sask.....                 | 2.05               | 50,000   | 1,711                     | 2.05               | 50,000   | 1,705                     |

# TRANSPORTATION IN CANADA

MANUFACTURED IN CANADA FOR EXPORT, FROM POINTS OF PRODUCTION TO CANADIAN EXPORT

pounds, except where otherwise indicated

FROM CANADA

| SAINT JOHN, N.B.   |  |                           | HALIFAX, N.S.      |  |                           | VANCOUVER, B.C.    |  |                           |
|--------------------|--|---------------------------|--------------------|--|---------------------------|--------------------|--|---------------------------|
| Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port | Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port | Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port |
| \$ .27             | 30,000   | 132                       | \$ .37             | 30,000   | 335                       | \$ 1.14            | 30,000   | 3,316                     |
| .37                | 30,000   | 482                       | .38                | 30,000   | 581                       | 1.11               | 30,000   | 3,005                     |
| .33½               | 30,000   | 600                       | .33½               | 30,000   | 949                       | 1.00               | 30,000   | 2,750                     |
| .39½               | 30,000   | 734                       | .39½               | 30,000   | 1,084                     | 1.00               | 30,000   | 2,691                     |
| .41                | 30,000   | 996                       | .41                | 30,000   | 1,164                     | 1.00               | 30,000   | 2,743                     |
| .33½               | 30,000   | 810                       | .33½               | 30,000   | 1,134                     | 1.00               | 30,000   | 2,697                     |
| .33½               | 30,000   | 850                       | .33½               | 30,000   | 1,173                     | 1.00               | 30,000   | 2,732                     |
| .34½               | 30,000   | 881                       | .34½               | 30,000   | 1,236                     | 1.00               | 30,000   | 2,723                     |
| .33½               | 30,000   | 1,026                     | .33½               | 30,000   | 1,194                     | 1.00               | 30,000   | 2,822                     |
| .41                | 30,000   | 943                       | .41                | 30,000   | 1,233                     | 1.00               | 30,000   | 2,803                     |
| .39½               | 36,000   | 1,046                     | .39½               | 36,000   | 1,213                     | 1.50               | 30,000   | 2,842                     |
| .39½               | 36,000   | 1,032                     | .39½               | 36,000   | 1,200                     | 1.50               | 30,000   | 2,833                     |
| .39½               | 36,000   | 891                       | .39½               | 36,000   | 1,060                     | 1.50               | 30,000   | 2,836                     |
| .27                | 40,000   | 432                       | .21                | 40,000   | 290                       | .82                | 80,000   | 3,705                     |
| .34½               | 40,000   | 488                       | .37½               | 40,000   | 803                       | .72                | 80,000   | 2,882                     |
| .39½               | 36,000   | 850                       | .39½               | 36,000   | 1,173                     | .72                | 80,000   | 2,732                     |
| .66½               | 36,000   | 1,091                     | .67½               | 36,000   | 1,720                     | .72                | 80,000   | 2,476                     |
| .74                | 15,000   | 793                       | .74                | 15,000   | 1,101                     | 2.10               | 15,000   | 2,731                     |
| .74                | 15,000   | 810                       | .74                | 15,000   | 1,134                     | 2.10               | 15,000   | 2,697                     |
| .82½               | 15,000   | 1,033                     | .82½               | 15,000   | 1,355                     | 2.10               | 15,000   | 2,716                     |
| .82½               | 15,000   | 1,036                     | .82½               | 15,000   | 1,358                     | 2.10               | 15,000   | 2,719                     |
| —                  | —  | .30                       | 26,000             | 279  | 1.41                      | 30,000             | 3,349  |                           |
| .38                | 30,000   | 488                       | .38                | 40,000   | 803                       | 1.25               | 30,000   | 2,882                     |
| .39½               | 30,000   | 810                       | .39½               | 30,000   | 1,134                     | 1.25               | 30,000   | 2,697                     |
| .39½               | 30,000   | 875                       | .39½               | 30,000   | 1,197                     | 1.25               | 30,000   | 2,758                     |
| 1.49½              | —  | 815                       | 1.49½              | —  | 1,413                     | 2.65               | —  | 2,689                     |
| .31                | 40,000   | 810                       | .31                | 40,000   | 1,134                     | 1.48½              | 36,000   | 2,697                     |
| .90                | 50,000   | 3,341                     | .90                | 50,000   | 3,538                     | .03                | 36,000   | 14                        |
| .23                | 50,000   | 753                       | .23                | 50,000   | 1,084                     | 1.48½              | 36,000   | 2,691                     |
| .23                | 50,000   | 1,043                     | .23                | 50,000   | 1,211                     | 1.48½              | 36,000   | 2,839                     |
| .23½               | 50,000   | 940                       | .23½               | 50,000   | 1,245                     | 1.48½              | 36,000   | 2,783                     |
| .25½               | 50,000   | 1,033                     | .25½               | 50,000   | 1,355                     | 1.48½              | 36,000   | 2,716                     |
| —                  | —  | .53                       | —                  | 279  | 2.83                      | —                  | —  | 3,349                     |
| .97                | —  | 488                       | .97                | —  | 803                       | 2.55               | —  | 2,882                     |
| .99½               | —  | 728                       | .99½               | —  | 896                       | 2.55               | —  | 2,911                     |
| .99½               | —  | 810                       | .99½               | —  | 1,134                     | 2.55               | —  | 2,697                     |
| .99½               | —  | 850                       | .99½               | —  | 1,173                     | 2.55               | —  | 2,732                     |
| 1.20½              | —  | 1,113                     | 1.20½              | —  | 1,281                     | 2.55               | —  | 2,887                     |
| .49                | 9,000  | 488                       | .49                | 9,000  | 803                       | 2.10               | 20,000   | 2,882                     |
| .66                | 20,000   | 753                       | .66                | 20,000   | 1,084                     | 2.10               | 20,000   | 2,691                     |
| .66                | 20,000   | 810                       | .66                | 20,000   | 1,134                     | 2.10               | 20,000   | 2,697                     |
| .66                | 20,000   | 850                       | .66                | 20,000   | 1,173                     | 2.10               | 20,000   | 2,732                     |
| 2.49               | 50,000   | 2,693                     | 2.49               | 50,000   | 2,861                     | 1.37               | 20,000   | 642                       |
| 2.49               | 50,000   | 2,620                     | 2.49               | 50,000   | 2,788                     | 1.37               | 20,000   | 766                       |
| 2.31               | 50,000   | 2,349                     | 2.31               | 50,000   | 2,517                     | 2.01               | 20,000   | 1,148                     |
| 2.23               | 50,000   | 2,297                     | 2.23               | 50,000   | 2,465                     | 1.97               | 20,000   | 1,088                     |
| 2.13               | 50,000   | 2,225                     | 2.13               | 50,000   | 2,393                     | 1.92½              | 20,000   | 1,057                     |
| 2.08               | 50,000   | 2,183                     | 2.08               | 50,000   | 2,351                     | 1.92½              | 20,000   | 1,109                     |

THE CANADIAN INDUSTRIAL FIELD

STATEMENT OF RAILWAY FREIGHT RATES ON A NUMBER OF THE PRINCIPAL COMMODITIES  
PORTS OF

Rates are in dollars and cents per hundred

TO PORTS OF EXPORT

| Commodity  | From producing point                          | MONTREAL, QUE.     |  |                           | QUEBEC, QUE.       |  |                           |
|--|---|--------------------|--|---------------------------|--------------------|--|---------------------------|
|  |   | Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port | Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port |
|  |   | Lbs.               |  | Lbs.                      |                    |  |                           |
| Butter, carloads. (con.)....                     | Winnipeg, Man.....                            | 1.61               | 50,000   | 1,355                     | 1.61               | 50,000   | 1,349                     |
|  | Peterborough, Ont.....                        | .60                | 20,000   | 284                       | .60                | 20,000   | 453                       |
|  | Brantford, Ont.....                           | .64                | 20,000   | 394                       | .64                | 20,000   | 563                       |
| Cable, copper, carloads....                      | Montreal, Que.....                            | —                  | 30,000   | —                         | .19                | 30,000   | 172                       |
|  | Toronto, Ont.....                             | .44                | 30,000   | 334                       | .44                | 30,000   | 503                       |
|  | Hamilton, Ont.....                            | .44                | 30,000   | 373                       | .44                | 30,000   | 542                       |
| Calcium carbide, carloads....                    | Shawinigan Falls, Que.....                    | .19½               | 40,000   | 94                        | .19½               | 40,000   | 91                        |
|  | Welland, Ont.....                             | .31½               | 40,000   | 414                       | .31½               | 40,000   | 582                       |
| Canned fish, carloads.....                       | Hubbards, N.S.....                            | .56                | 36,000   | 831                       | .42                | 24,000   | 692                       |
|  | Blacks Harbour<br>(Pennfield), N.B.....       | .42                | 36,000   | 459                       | .42                | 24,000   | 621                       |
|  | Loggieville, N.B.....                         | .42                | 36,000   | 587                       | .44                | 24,000   | 448                       |
|  | Montreal, Que.....                            | —                  | 24,000   | —                         | .15                | 36,000   | 172                       |
|  | Vancouver, B.C.....                           | .80                | 60,000   | 2,882                     | .80                | 60,000   | 2,905                     |
| Canned fruit and vegetables, carloads.....       | Quebec, Que.....                              | .38½               | 24,000   | 172                       | —                  | —  | —                         |
|  | Saint Johns, Que.....                         | .20½               | 24,000   | 27                        | .36½               | 24,000   | 187                       |
|  | Huntington, Ont.....                          | .37½               | 36,000   | 373                       | .37½               | 36,000   | 542                       |
|  | Dunaville, Ont.....                           | .37½               | 36,000   | 413                       | .37½               | 36,000   | 581                       |
|  | Windsor, Ont.....                             | .42                | 36,000   | 555                       | .42                | 36,000   | 724                       |
|  | Keremeos, B.C.....                            | 2.68½              | 24,000   | —                         | 2.74½              | 24,000   | —                         |
|  | Kelowna, B.C.....                             | .80                | 60,000   | 2,527                     | .80                | 60,000   | 2,766                     |
|  | New Westminster, B.C.....                     | .80                | 60,000   | 2,874                     | .80                | 60,000   | 2,892                     |
| Canned lobsters, carloads.....                   | Pictou, N.S.....                              | .42                | 36,000   | 762                       | .41                | 36,000   | 623                       |
|  | Clarks Harbour (Barrington Passage), N.S..... | .56                | 36,000   | 995                       | .56                | 24,000   | 856                       |
|  | Port Elgin, N.B.....                          | .42                | 36,000   | 673                       | .45                | 24,000   | 534                       |
|  | Shediac, N.B.....                             | .42                | 36,000   | 631                       | .45                | 24,000   | 493                       |
|  | Chatham, N.B.....                             | .42                | 36,000   | 581                       | .44                | 24,000   | 442                       |
| Cement, Portland, carloads.....                  | Montreal, Que.....                            | —                  | —  | —                         | .14                | 60,000   | 172                       |
|  | Bellefonte, Ont.....                          | .28½               | 60,000   | 221                       | .32½               | 50,000   | 390                       |
|  | St. Marys, Ont.....                           | .27½               | 60,000   | 434                       | .32½               | 50,000   | 602                       |
|  | Victoria, B.C.....                            | 1.53½              | 40,000   | 2,965                     | 1.15½              | 40,000   | 2,988                     |
| Chocolates and confectionery, less carloads..... | St. Stephen, N.B.....                         | .81                | —  | 438                       | .74                | —  | 599                       |
|  | Montreal, Que.....                            | —                  | —  | —                         | .26½               | —  | 172                       |
|  | Toronto, Ont.....                             | .69                | —  | 334                       | .69                | —  | 503                       |
|  | Kitchener, Ont.....                           | .83                | —  | 397                       | .83                | —  | 565                       |
|  | London, Ont.....                              | .88                | —  | 445                       | .88                | —  | 614                       |
| Corsets, less carloads.....                      | Quebec, Que.....                              | .72                | —  | 172                       | —                  | —  | —                         |
|  | St. Hyacinthe, Que.....                       | .44                | —  | 36                        | .65½               | —  | 136                       |
|  | Toronto, Ont.....                             | .79                | —  | 334                       | .79                | —  | 503                       |
| Furniture (chairs), carloads.....                | Bass River (Londonderry), N.S.....            | .39½               | 20,000   | 722                       | .45                | 24,000   | 583                       |
|  | Granby, Que.....                              | .24                | 24,000   | 54                        | .38½               | 24,000   | 216                       |
|  | Princeville, Que.....                         | .33                | 24,000   | 117                       | .28                | 24,000   | 64                        |
|  | Beauharnois, Que.....                         | .20½               | 24,000   | 40                        | .36½               | 24,000   | 199                       |
|  | Victoriaville, Que.....                       | .33                | 24,000   | 108                       | .29                | 24,000   | 73                        |
|  | Chesley, Ont.....                             | .42                | 24,000   | 463                       | .42                | 24,000   | 632                       |
|  | Kincardine, Ont.....                          | .42                | 24,000   | 493                       | .42                | 24,000   | 662                       |
|  | Owen Sound, Ont.....                          | .42                | 24,000   | 498                       | .42                | 24,000   | 666                       |

## TRANSPORTATION IN CANADA

**MANUFACTURED IN CANADA FOR EXPORT, FROM POINTS OF PRODUCTION TO CANADIAN EXPORT**

pounds, except where otherwise indicated.

**FROM CANADA**

| SAINT JOHN, N.B.   |  |                           | HALIFAX, N.S.      |  |                           | VANCOUVER, B.C.    |  |                           |
|--------------------|--|---------------------------|--------------------|--|---------------------------|--------------------|--|---------------------------|
| Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port | Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port | Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port |
| Lbs.               |  |                           | Lbs.               |  |                           | Lbs.               |  |                           |
| .164               | 50,000   | 1,827                     | .164               | 50,000   | 1,995                     | 2.21               | 20,000   | 1,465                     |
| .66                | 20,000   | 753                       | .66                | 20,000   | 1,084                     | 2.10               | 20,000   | 2,691                     |
| .66                | 20,000   | 1,026                     | .66                | 20,000   | 1,194                     | 2.10               | 20,000   | 2,822                     |
| .46                | 30,000   | 488                       | .46                | 30,000   | 803                       | 1.00               | 50,000   | 2,882                     |
| .46                | 30,000   | 810                       | .46                | 30,000   | 1,134                     | 1.00               | 50,000   | 2,697                     |
| .46                | 30,000   | 850                       | .46                | 30,000   | 1,173                     | 1.00               | 50,000   | 2,732                     |
| .29½               | 40,000   | 565                       | .29½               | 40,000   | 733                       | 1.00               | 50,000   | 2,857                     |
| .33½               | 40,000   | 1,046                     | .33½               | 40,000   | 1,213                     | 1.00               | 50,000   | 2,842                     |
| .33                | 24,000   | 306                       | .15                | 24,000   | 37                        | 1.40               | 40,000   | 3,578                     |
| —                  | 24,000   | —                         | —                  | 24,000   | —                         | 1.34               | 40,000   | 3,419                     |
| .26                | 24,000   | 179                       | .32                | 24,000   | 278                       | 1.34               | 40,000   | 3,334                     |
| .38                | 36,000   | 488                       | .38                | 36,000   | 803                       | 1.18               | 40,000   | 2,882                     |
| .80                | 60,000   | 3,349                     | .80                | 60,000   | 3,551                     | —                  | —  | —                         |
| .38                | 36,000   | 497                       | .38                | 36,000   | 665                       | 1.28               | 40,000   | 2,905                     |
| .38                | 24,000   | 453                       | .38                | 24,000   | 818                       | 1.24               | 40,000   | 2,797                     |
| .39½               | 36,000   | 850                       | .39½               | 36,000   | 1,173                     | 1.18               | 40,000   | 2,732                     |
| .39½               | 36,000   | 1,043                     | .39½               | 36,000   | 1,212                     | 1.18               | 40,000   | 2,840                     |
| .44                | 36,000   | 1,033                     | .44                | 36,000   | 1,355                     | 1.18               | 40,000   | 2,716                     |
| 2.80½              | 24,000   | —                         | 2.82½              | 24,000   | —                         | —                  | —  | —                         |
| .80                | 60,000   | 3,094                     | .80                | 60,000   | 3,412                     | .68                | 24,000   | 289                       |
| .80                | 60,000   | 3,341                     | .80                | 60,000   | 3,538                     | .14                | 24,000   | 14                        |
| .30                | 24,000   | 237                       | .23                | 24,000   | 119                       | 1.36               | 40,000   | 3,509                     |
| .40                | 24,000   | 470                       | .26                | 24,000   | 200                       | 1.62               | 40,000   | 3,739                     |
| .26                | 24,000   | 148                       | .26                | 24,000   | 171                       | 1.36               | 40,000   | 3,420                     |
| .23                | 24,000   | 86                        | .07                | 24,000   | 192                       | 1.34               | 40,000   | 3,379                     |
| .26                | 24,000   | 173                       | .32                | 24,000   | 272                       | 1.34               | 40,000   | 3,329                     |
| .17                | 50,000   | 488                       | .17                | 50,000   | 803                       | 1.48½              | 40,000   | 2,882                     |
| .33½               | 50,000   | 853                       | .33½               | 50,000   | 1,021                     | 1.48½              | 40,000   | 2,811                     |
| .34½               | 50,000   | 943                       | .34½               | 50,000   | 1,233                     | 1.48½              | 40,000   | 2,803                     |
| 1.61               | 40,000   | 3,432                     | 1.62½              | 40,000   | 3,634                     | .21                | 40,000   | 83                        |
| .35                | —  | 86                        | .90                | —  | 361                       | 2.83               | —  | 3,299                     |
| .83½               | —  | 488                       | .83½               | —  | 803                       | 2.55               | —  | 2,882                     |
| .87                | —  | 810                       | .87                | —  | 1,134                     | 2.55               | —  | 2,697                     |
| .87                | —  | 875                       | .87                | —  | 1,197                     | 2.55               | —  | 2,758                     |
| .91                | —  | 940                       | .91                | —  | 1,245                     | 2.55               | —  | 2,783                     |
| .97                | —  | 497                       | .97                | —  | 665                       | 2.50               | —  | 2,905                     |
| .97                | —  | 464                       | .97                | —  | 768                       | 2.62               | —  | 2,936                     |
| .99½               | —  | 810                       | .99½               | —  | 1,134                     | 2.50               | —  | 2,697                     |
| .25                | 20,000   | 197                       | .19½               | 20,000   | 82                        | 1.68               | 24,000   | 3,470                     |
| .42                | 20,000   | 675                       | .42                | 20,000   | 843                       | 1.56               | 24,000   | 2,960                     |
| .38                | 24,000   | 528                       | .38                | 24,000   | 696                       | 1.60               | 24,000   | 2,968                     |
| .39½               | 24,000   | 663                       | .39½               | 24,000   | 831                       | 1.56               | 24,000   | 2,910                     |
| .42                | 20,000   | 537                       | .42                | 20,000   | 705                       | 1.56               | 24,000   | 2,951                     |
| .48                | 24,000   | 1,155                     | .48                | 24,000   | 1,263                     | 1.50               | 24,000   | 2,868                     |
| .48                | 24,000   | 1,125                     | .48                | 24,000   | 1,293                     | 1.50               | 24,000   | 2,898                     |
| .48                | 24,000   | 1,129                     | .48                | 24,000   | 1,298                     | 1.50               | 24,000   | 2,766                     |

# THE CANADIAN INDUSTRIAL FIELD

## STATEMENT OF RAILWAY FREIGHT RATES ON A NUMBER OF THE PRINCIPAL COMMODITIES

PORTS OF

Rates are in dollars and cents per hundred

TO PORTS OF EXPORT

| Commodity                                       | From producing point                 | MONTREAL, QUE.           |   |   | QUEBEC, QUE.             |   |   |
|---|--------------------------------------|--------------------------|---|---|--------------------------|---|---|
|   |                                      | Rates<br>per<br>100 lbs. | Minimum<br>weight per<br>carload<br>for<br>which rate<br>will apply | Dis-tan-<br>ce<br>in<br>miles<br>to<br>port | Rates<br>per<br>100 lbs. | Minimum<br>weight per<br>carload<br>for<br>which rate<br>will apply | Dis-tan-<br>ce<br>in<br>miles<br>to<br>port |
|   |                                      |                          |   | Lbs.  |                          |   | Lbs.  |
| Gypsum, carloads.....                           | Iona, N.S.....                       | .36                      | 40,000  | 900   | 0.35                     | 40,000  | 761   |
|   | Montreal, Que.....                   | —                        | 40,000  | —   | .14                      | 40,000  | 172   |
|   | Paris, Ont.....                      | .31½                     | 40,000  | 397   | .31½                     | 40,000  | 566   |
|   | Winnipeg, Man.....                   | .77½                     | 40,000  | 1,355                                       | .77½                     | 40,000  | 1,349                                       |
| Hardware, less carloads....                     | Roxton Pond (South Roxton), Que..... | .54                      | —   | 93  | .67                      | —   | 341   |
|   | Brockville, Ont.....                 | .47                      | —   | 126   | .54½                     | —   | 295   |
|   | Belleville, Ont.....                 | .54                      | —   | 221   | .56                      | —   | 390   |
|   | Guelph, Ont.....                     | .64                      | —   | 383   | .64                      | —   | 551   |
|   | Hamilton, Ont.....                   | .62                      | —   | 373   | .62                      | —   | 542   |
| Hoes, rakes, hand tools,<br>etc, less carloads. | Montreal, Que.....                   | —                        | —   | —   | .26½                     | —   | 172   |
|   | Danville, Que.....                   | .58                      | —   | 89  | .79                      | —   | 93  |
|   | St. Catharines, Ont.....             | .79                      | —   | 399   | .79                      | —   | 569   |
|   | Tillsonburg, Ont.....                | .84½                     | —   | 427   | .84½                     | —   | 596   |
|   | St. Thomas, Ont.....                 | .88                      | —   | 452   | .88                      | —   | 621   |
| Hosiery, less carloads....                      | Drummondville, Que.....              | .51                      | —   | 65  | .36                      | —   | 107   |
|   | St. Catharines, Ont.....             | .90                      | —   | 399   | .90                      | —   | 569   |
|   | Galt, Ont.....                       | .94                      | —   | 399   | .94                      | —   | 559   |
|   | Hamilton, Ont.....                   | .82½                     | —   | 373   | .82½                     | —   | 542   |
|   | London, Ont.....                     | 1.00½                    | —   | 445   | 1.00½                    | —   | 614   |
|   | Dunnville, Ont.....                  | .97                      | —   | 412   | .97                      | —   | 581   |
| Lawn mowers, less carloads                      | Brockville, Ont.....                 | .47                      | —   | 126   | .54½                     | —   | 295   |
|   | St. Marys, Ont.....                  | .75                      | —   | 434   | .75                      | —   | 602   |
|   | Guelph, Ont.....                     | .67                      | —   | 383   | .67                      | —   | 551   |
| Leather, sole, less carloads                    | St. Hyacinthe, Que.....              | .34½                     | —   | 36  | .51                      | —   | 136   |
|   | Huntsville, Ont.....                 | .69                      | —   | 342   | .77½                     | —   | 494   |
|   | Acton, Ont.....                      | .72                      | —   | 370   | .79                      | —   | 539   |
|   | Kitchener, Ont.....                  | .74½                     | —   | 397   | .83                      | —   | 565   |
|   | London, Ont.....                     | .79½                     | —   | 445   | .88                      | —   | 614   |
| Leather, upper, less car-<br>loads.             | Montreal, Que.....                   | —                        | —   | —   | .26½                     | —   | 172   |
|   | Kingston, Ont.....                   | .56½                     | —   | 175   | .61½                     | —   | 344   |
|   | Oshawa, Ont.....                     | .67                      | —   | 301   | .69                      | —   | 469   |
|   | Newmarket, Ont.....                  | .72                      | —   | 368   | .79                      | —   | 537   |
| Macaroni, less carloads....                     | Montreal, Que.....                   | —                        | —   | —   | .19                      | —   | 172   |
|   | St. Catharines, Ont.....             | .44                      | —   | 399   | .44                      | —   | 569   |
| Meats, fresh, carloads....                      | Calgary, Alta.....                   | 1.64                     | 21,000  | 2,221                                       | 1.64                     | 21,000  | 2,215                                       |
|   | Edmonton, Alta.....                  | 1.64½                    | 21,000  | 2,148                                       | 1.64                     | 21,000  | 2,142                                       |
|   | Prince Albert, Sask.....             | 1.55                     | 21,000  | 1,876                                       | 1.55                     | 21,000  | 1,870                                       |
|   | Moose Jaw, Sask.....                 | 1.43½                    | 21,000  | 1,752                                       | 1.43½                    | 21,000  | 1,746                                       |
|   | Regina, Sask.....                    | 1.39                     | 21,000  | 1,711                                       | 1.39                     | 21,000  | 1,705                                       |
|   | Winnipeg, Man.....                   | 1.11                     | 21,000  | 1,355                                       | 1.11                     | 21,000  | 1,349                                       |
|   | Peterborough, Ont.....               | .53½                     | 20,000  | 267   | .53½                     | 20,000  | 429   |
|   | Toronto, Ont.....                    | .53½                     | 20,000  | 334   | .53½                     | 20,000  | 503   |
|   | Brantford, Ont.....                  | .53½                     | 20,000  | 394   | .53½                     | 20,000  | 563   |
|   | Hamilton, Ont.....                   | .53½                     | 21,000  | 373   | .53½                     | 21,000  | 542   |
|   | Montreal, Que.....                   | —                        | —   | —   | .22½                     | 21,000  | 172   |
| Meats, cured, carloads....                      | Calgary, Alta.....                   | 1.40                     | 30,000  | 2,221                                       | 1.40                     | 30,000  | 2,215                                       |
|   | Edmonton, Alta.....                  | 1.40                     | 30,000  | 2,148                                       | 1.40                     | 30,000  | 2,142                                       |
|   | Prince Albert, Sask.....             | 1.30½                    | 30,000  | 1,876                                       | 1.30½                    | 30,000  | 1,870                                       |
|   | Moose Jaw, Sask.....                 | 1.21                     | 30,000  | 1,752                                       | 1.21                     | 30,000  | 1,746                                       |
|   | Regina, Sask.....                    | 1.16½                    | 30,000  | 1,711                                       | 1.16½                    | 30,000  | 1,705                                       |

# TRANSPORTATION IN CANADA

MANUFACTURED IN CANADA FOR EXPORT, FROM POINTS OF PRODUCTION TO CANADIAN EXPORT

pounds, except where otherwise indicated.

FROM CANADA

| SAINT JOHN, N.B.   |  |                           | HALIFAX, N.S.      |  |                           | VANCOUVER, B.C.    |  |                           |
|--------------------|--|---------------------------|--------------------|--|---------------------------|--------------------|--|---------------------------|
| Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port | Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port | Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port |
|                    | Lbs.   |                           |                    | Lbs.   |                           |                    | Lbs.   |                           |
| 0.25               | 40,000   | 375                       | .21                | 40,000   | 233                       | 1.53½              | 40,000   | 3,647                     |
| .32                | 40,000   | 488                       | .32                | 40,000   | 803                       | 1.48½              | 40,000   | 2,882                     |
| .33½               | 40,000   | 1,029                     | .33½               | 40,000   | 1,197                     | 1.48½              | 40,000   | 2,827                     |
| .87                | 40,000   | 1,827                     | .88½               | 40,000   | 1,195                     | .92                | 40,000   | 1,465                     |
| .65                | —  | 429                       | .65                | —  | 922                       | 2.19               | —  | 2,954                     |
| .66                | —  | 647                       | .66                | —  | 926                       | 2.10               | —  | 2,777                     |
| .66                | —  | 712                       | .66                | —  | 1,021                     | 2.10               | —  | 2,808                     |
| .66                | —  | 861                       | .66                | —  | 1,183                     | 2.10               | —  | 2,743                     |
| .66                | —  | 850                       | .66                | —  | 1,173                     | 2.10               | —  | 2,732                     |
| .83½               | —  | 488                       | .83½               | —  | 803                       | 2.55               | —  | 2,882                     |
| .88                | —  | 556                       | .91½               | —  | 725                       | 2.66               | —  | 2,979                     |
| .87                | —  | 1,032                     | .87                | —  | 1,200                     | 2.55               | —  | 2,833                     |
| .91                | —  | 918                       | .91                | —  | 1,227                     | 2.55               | —  | 2,800                     |
| .91                | —  | 928                       | .91                | —  | 1,252                     | 2.55               | —  | 2,809                     |
| .97                | —  | 460                       | .97                | —  | 738                       | 2.92               | —  | 2,975                     |
| .99½               | —  | 1,032                     | .99½               | —  | 1,200                     | 2.80               | —  | 2,833                     |
| .99                | —  | 863                       | .99½               | —  | 1,199                     | 2.80               | —  | 2,746                     |
| .99                | —  | 850                       | .99½               | —  | 1,173                     | 2.80               | —  | 2,733                     |
| 1.03½              | —  | 940                       | 1.03½              | —  | 1,245                     | 2.80               | —  | 2,783                     |
| .99½               | —  | 1,043                     | .99½               | —  | 1,212                     | 2.80               | —  | 2,840                     |
| .74                | —  | 647                       | .74                | —  | 926                       | 2.55               | —  | 2,777                     |
| .77½               | —  | 943                       | .77½               | —  | 1,233                     | 2.55               | —  | 2,803                     |
| .74                | —  | 861                       | .74                | —  | 1,183                     | 2.55               | —  | 2,743                     |
| .78½               | —  | 464                       | .82                | —  | 768                       | 2.19               | —  | 2,936                     |
| .93                | —  | 968                       | .94½               | —  | 1,136                     | 2.10               | —  | 2,552                     |
| .87                | —  | 1,002                     | .87                | —  | 1,170                     | 2.10               | —  | 2,775                     |
| .87                | —  | 875                       | .87                | —  | 1,197                     | 2.10               | —  | 2,758                     |
| .91                | —  | 940                       | .91                | —  | 1,245                     | 2.10               | —  | 2,783                     |
| .78½               | —  | 488                       | .82                | —  | 803                       | 2.10               | —  | 2,882                     |
| .84½               | —  | 679                       | .87                | —  | 976                       | 2.10               | —  | 2,795                     |
| .87                | —  | 793                       | .87                | —  | 1,101                     | 2.10               | —  | 2,731                     |
| .91                | —  | 1,000                     | .91                | —  | 1,168                     | 2.10               | —  | 2,739                     |
| .46                | —  | 488                       | .46                | —  | 803                       | 2.10               | —  | 2,882                     |
| .46                | —  | 1,032                     | .46                | —  | 1,200                     | 2.10               | —  | 2,833                     |
| 1.66               | 21,000   | 2,698                     | 1.66               | 21,000   | 2,861                     | 1.10               | 20,000   | 642                       |
| 1.66               | 21,000   | 2,520                     | 1.66               | 21,000   | 2,758                     | 1.10               | 20,000   | 766                       |
| 1.57               | 21,000   | 2,349                     | 1.57               | 21,000   | 2,517                     | 1.53               | 20,000   | 1,148                     |
| 1.45½              | 21,000   | 2,225                     | 1.45½              | 21,000   | 2,393                     | 1.49               | 20,000   | 1,067                     |
| 1.41               | 21,000   | 2,183                     | 1.41               | 21,000   | 2,351                     | 1.50               | 20,000   | 1,109                     |
| 1.13               | 21,000   | 1,827                     | 1.13               | 21,000   | 1,995                     | 1.74               | 20,000   | 1,465                     |
| .55½               | 20,000   | 734                       | .55½               | 20,000   | 1,084                     | 1.70               | 20,000   | 2,691                     |
| .55½               | 20,000   | 810                       | .55½               | 20,000   | 1,134                     | 1.70               | 20,000   | 2,697                     |
| .55½               | 20,000   | 1,026                     | .55½               | 20,000   | 1,194                     | —                  | —  | —                         |
| .55½               | 21,000   | 850                       | .55½               | 21,000   | 1,173                     | 1.70               | 20,000   | 2,732                     |
| .54½               | 21,000   | 488                       | .54½               | 21,000   | 803                       | 1.70               | 20,000   | 2,882                     |
| 1.42               | 30,000   | 2,693                     | 1.42               | 30,000   | 2,861                     | .98                | 24,000   | 642                       |
| 1.42               | 30,000   | 2,620                     | 1.42               | 30,000   | 2,788                     | .98                | 24,000   | 766                       |
| 1.32½              | 30,000   | 2,349                     | 1.32½              | 30,000   | 2,517                     | 1.38               | 24,000   | 1,148                     |
| 1.23               | 30,000   | 2,225                     | 1.23               | 30,000   | 2,393                     | 1.32               | 24,000   | 1,067                     |
| 1,18½              | 30,000   | 2,183                     | 1.18½              | 30,000   | 2,351                     | 1.35               | 24,000   | 1,109                     |

# THE CANADIAN INDUSTRIAL FIELD

## STATEMENT OF RAILWAY FREIGHT RATES ON A NUMBER OF THE PRINCIPAL COMMODITIES

PORTS OF

Rates are in dollars and cents per hundred

TO PORTS OF EXPORT

| Commodity                                  | From producing point                           | MONTREAL, QUE.           |  |                                       | QUEBEC, QUE.             |  |                                       |
|--|--|--------------------------|--|---------------------------------------|--------------------------|--|---------------------------------------|
|  |  | Rates<br>per<br>100 lbs. | Minimum<br>weight per<br>carload for<br>which rate<br>will apply | Distance<br>in<br>miles<br>to<br>port | Rates<br>per<br>100 lbs. | Minimum<br>weight per<br>carload for<br>which rate<br>will apply | Distance<br>in<br>miles<br>to<br>port |
|  |  | Lbs.                     |  |                                       | Lbs.                     |  |                                       |
| Meats, cured, car. (con.)                  | Winnipeg, Man.                                 | .91                      | 30,000   | 1,355                                 | .91                      | 30,000   | 1,349                                 |
|  | Peterborough, Ont.                             | .30                      | 30,000   | 267                                   | .32                      | 30,000   | 429                                   |
|  | Toronto, Ont.                                  | .37½                     | 30,000   | 334                                   | .37½                     | 30,000   | 503                                   |
|  | Brantford, Ont.                                | .37½                     | 30,000   | 394                                   | .37½                     | 30,000   | 563                                   |
|  | Hamilton, Ont.                                 | .34½                     | 30,000   | 373                                   | .34½                     | 30,000   | 542                                   |
|  | Montreal, Que.                                 | —                        | —  | —                                     | .15                      | 30,000   | 172                                   |
| Nails, wire, less carloads...              | Saint John, N.B.                               | .59                      | —  | 488                                   | .54                      | —  | 497                                   |
|  | Montreal, Que.                                 | —                        | —  | —                                     | .19                      | —  | 172                                   |
| Paint, carloads.....                       | Montreal, Que.                                 | —                        | —  | —                                     | .15                      | 36,000   | 172                                   |
|  | Toronto, Ont.                                  | .37½                     | 36,000   | 334                                   | .37½                     | 36,000   | 503                                   |
|  | Windsor, Ont.                                  | .42                      | 36,000   | 555                                   | .42                      | 36,000   | 724                                   |
|  | Winnipeg, Man.                                 | 1.18                     | 30,000   | 1,355                                 | 1.18                     | 30,000   | 1,349                                 |
| Paper, book and writing,<br>less carloads. | St. Jérôme, Que.                               | .37½                     | —  | 33                                    | .61½                     | —  | 178                                   |
|  | Mille Roches, Ont.                             | .45½                     | —  | 73                                    | .61½                     | —  | 245                                   |
|  | Cornwall, Ont.                                 | .41½                     | —  | 68                                    | .61½                     | —  | 240                                   |
|  | Merriton, Ont.                                 | .79                      | —  | 402                                   | .79                      | —  | 571                                   |
| Paper, newsprint, carloads                 | Bathurst, N.B.                                 | .39                      | 40,000   | 525                                   | .42                      | 30,000   | 386                                   |
|  | Three Rivers, Que.                             | .15                      | 40,000   | 96                                    | .15                      | 40,000   | 78                                    |
|  | Hull, Que.                                     | .18                      | 40,000   | 119                                   | .20                      | 40,000   | 268                                   |
|  | Iroquois Falls, Ont.                           | .48½                     | 40,000   | 569                                   | .54½                     | 40,000   | 605                                   |
|  | Port Arthur, Ont.                              | .41½                     | 40,000   | 993                                   | .43½                     | 40,000   | 1,040                                 |
| Pianos and organs, car-<br>loads.          | St. Hyacinthe, Que.                            | .38½                     | 12,000   | 36                                    | .58                      | 12,000   | 136                                   |
|  | Oshawa, Ont.                                   | .69                      | 12,000   | 301                                   | .69                      | 12,000   | 469                                   |
|  | Toronto, Ont.                                  | .69                      | 12,000   | 334                                   | .69                      | 12,000   | 503                                   |
|  | Guelph, Ont.                                   | .79                      | 12,000   | 383                                   | .79                      | 12,000   | 551                                   |
|  | London, Ont.                                   | .88                      | 12,000   | 445                                   | .88                      | 12,000   | 614                                   |
| Plaster, wall, carloads....                | Iona, N.S.                                     | .26½                     | 50,000   | 900                                   | .35                      | 40,000   | 761                                   |
|  | Montreal, Que.                                 | —                        | —  | —                                     | .14                      | 40,000   | 172                                   |
|  | Paris, Ont.                                    | .31½                     | 40,000   | 397                                   | .31½                     | 40,000   | 566                                   |
|  | Winnipeg, Man.                                 | .77½                     | 40,000   | 1,355                                 | .77½                     | 40,000   | 1,349                                 |
| Pulp, chemical, carloads..                 | Saint John, N.B.                               | .26                      | 50,000   | 488                                   | .32                      | 40,000   | 497                                   |
|  | Grand Mère, Que.                               | .14                      | 50,000   | 94                                    | .22                      | 40,000   | 84                                    |
|  | Three Rivers, Que.                             | .14                      | 50,000   | 96                                    | .17                      | 50,000   | 78                                    |
|  | Kenogami,<br>(Jonquière), Que.                 | .40½                     | 40,000   | 298                                   | .14½                     | 50,000   | 218                                   |
| Pulp, mechanical, carloads                 | Sheet Harbour (Upper<br>Musquodoboit), N.S.... | .36                      | 40,000   | 869                                   | .35                      | 40,000   | 731                                   |
|  | Pont Etchemin (St.<br>Romuald), Que.           | .26                      | 40,000   | 159                                   | .11½                     | 40,000   | 21                                    |
|  | Donnacona, Que.                                | .23½                     | 40,000   | 150                                   | .31½                     | 40,000   | 34                                    |
|  | Buckingham, Que.                               | .25                      | 40,000   | 104                                   | .32½                     | 40,000   | 274                                   |
| Rails, steel, carloads.....                | Sydney, N.S.                                   | *5.39                    | 60,000   | 956                                   | *.46                     | 40,000   | 818                                   |
|  | Sault Ste. Marie, Ont.                         | *6.29½                   | 60,000   | 623                                   | *8.79½                   | 60,000   | 770                                   |
| Records, phonograph,<br>less carloads.     | Lachine, Que.                                  | —                        | —  | 8                                     | .30                      | —  | 174                                   |
|  | Toronto, Ont.                                  | .79                      | —  | 334                                   | .79                      | —  | 503                                   |
|  | London, Ont.                                   | 1.00½                    | —  | 445                                   | 1.00½                    | —  | 614                                   |
| Refrigerators, carloads....                | Montreal, Que.                                 | —                        | —  | —                                     | .19                      | 24,000   | 172                                   |
|  | Renfrew, Ont.                                  | .43                      | 24,000   | 164                                   | .45                      | 24,000   | 323                                   |
|  | Paris, Ont.                                    | .44                      | 24,000   | 397                                   | .44                      | 24,000   | 566                                   |
|  | Owen Sound, Ont.                               | .54                      | 24,000   | 498                                   | .54                      | 24,000   | 666                                   |

## TRANSPORTATION IN CANADA

**MANUFACTURED IN CANADA FOR EXPORT, FROM POINTS OF PRODUCTION TO CANADIAN EXPORT**

pounds, except where otherwise indicated.

**FROM CANADA**

| SAINT JOHN, N.B.               |  |                           | HALIFAX, N.S.      |  |                           | VANCOUVER, B.C.    |  |                           |
|--------------------------------|--|---------------------------|--------------------|--|---------------------------|--------------------|--|---------------------------|
| Rates per 100 lbs.             | Minimum weight per carload for which rate will apply | Distance in miles to port | Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port | Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port |
|                                | Lbs.   |                           | Lbs.               |  |                           | Lbs.               |  |                           |
| .93                            | 30,000   | 1,827                     | .93                | 30,000   | 1,995                     | 1.58               | 24,000   | 1,465                     |
| .32                            | 30,000   | 734                       | .32                | 30,000   | 1,084                     | 1.50               | 24,000   | 2,691                     |
| .39 $\frac{1}{2}$              | 30,000   | 810                       | .39 $\frac{1}{2}$  | 30,000   | 1,134                     | 1.50               | 24,000   | 2,697                     |
| .39 $\frac{1}{2}$              | 30,000   | 1,026                     | .39 $\frac{1}{2}$  | 30,000   | 1,194                     | —                  | —  | —                         |
| .39 $\frac{1}{2}$              | 30,000   | 850                       | .39 $\frac{1}{2}$  | 30,000   | 1,173                     | 1.50               | 24,000   | 2,732                     |
| .33 $\frac{1}{2}$              | 30,000   | 488                       | .33 $\frac{1}{2}$  | 30,000   | 803                       | 1.50               | 24,000   | 2,882                     |
| —                              | —  | —                         | .38                | —  | 279                       | 1.90               | —  | 3,349                     |
| .46                            | —  | 488                       | .46                | —  | 803                       | 1.70               | —  | 2,882                     |
| .38                            | 36,000   | 488                       | .38                | 36,000   | 803                       | 1.50               | 30,000   | 2,882                     |
| .39 $\frac{1}{2}$              | 36,000   | 810                       | .38 $\frac{1}{2}$  | 36,000   | 1,134                     | 1.50               | 30,000   | 2,697                     |
| .44                            | 36,000   | 1,033                     | .44                | 36,000   | 1,355                     | 1.50               | 30,000   | 2,716                     |
| 1.30                           | 30,000   | 1,827                     | 1.32               | 30,000   | 1,995                     | 1.71               | 30,000   | 1,465                     |
| .87                            | —  | 510                       | .87                | —  | 819                       | 2.10               | —  | 2,789                     |
| .87                            | —  | 708                       | .87                | —  | 876                       | 2.10               | —  | 2,959                     |
| .87                            | —  | 703                       | .87                | —  | 871                       | 2.10               | —  | 2,902                     |
| .87                            | —  | 1,034                     | .87                | —  | 1,202                     | 2.10               | —  | 2,830                     |
| .25                            | 40,000   | 214                       | .28                | 40,000   | 313                       | 1.16               | 40,000   | 3,272                     |
| .25                            | 40,000   | 564                       | .25                | 40,000   | 733                       | 1.00               | 40,000   | 2,951                     |
| .25                            | 40,000   | 605                       | .25                | 40,000   | 912                       | 1.00               | 40,000   | 2,763                     |
| .95 $\frac{1}{2}$              | 30,000   | 1,063                     | .97                | 30,000   | 1,250                     | 1.00               | 40,000   | 2,365                     |
| .43 $\frac{1}{2}$              | 40,000   | 1,461                     | .43 $\frac{1}{2}$  | 40,000   | 1,719                     | 1.00               | 40,000   | 1,888                     |
| .83 $\frac{1}{2}$              | 12,000   | 464                       | .83 $\frac{1}{2}$  | 12,000   | 768                       | 2.66               | 12,000   | 2,036                     |
| .87                            | 12,000   | 793                       | .87                | 12,000   | 1,101                     | 2.55               | 12,000   | 2,731                     |
| .87                            | 12,000   | 810                       | .87                | 12,000   | 1,134                     | 2.55               | 12,000   | 2,697                     |
| .87                            | 12,000   | 861                       | .87                | 12,000   | 1,183                     | 2.55               | 12,000   | 2,743                     |
| .91                            | 12,000   | 940                       | .91                | 12,000   | 1,245                     | 2.55               | 12,000   | 2,783                     |
| .15                            | 50,000   | 375                       | .12                | 50,000   | 233                       | 1.53 $\frac{1}{2}$ | 40,000   | 3,647                     |
| .45                            | 36,000   | 488                       | .25                | 36,000   | 803                       | 1.92 $\frac{1}{2}$ | 60,000   | 2,882                     |
| .33 $\frac{1}{2}$              | 40,000   | 1,029                     | .33 $\frac{1}{2}$  | 40,000   | 1,197                     | 1.92 $\frac{1}{2}$ | 6,000  | 2,827                     |
| .87                            | 40,000   | 1,827                     | .88 $\frac{1}{2}$  | 40,000   | 1,995                     | .92                | 60,000   | 1,465                     |
| —                              | —  | —                         | .21                | 40,000   | 279                       | 1.52 $\frac{1}{2}$ | 40,000   | 3,349                     |
| .25                            | 50,000   | 558                       | .25                | 50,000   | 726                       | 1.52 $\frac{1}{2}$ | 40,000   | 2,850                     |
| .25                            | 50,000   | 564                       | .25                | 50,000   | 733                       | 1.52 $\frac{1}{2}$ | 40,000   | 2,951                     |
| .27                            | 50,000   | 710                       | .27                | 50,000   | 878                       | 1.56               | 40,000   | 3,009                     |
| .24                            | 40,000   | 344                       | .14                | 40,000   | 98                        | 1.53 $\frac{1}{2}$ | 40,000   | 3,617                     |
| .34 $\frac{1}{2}$              | 40,000   | 484                       | .34 $\frac{1}{2}$  | 40,000   | 652                       | 1.52 $\frac{1}{2}$ | 40,000   | 2,907                     |
| .25                            | 60,000   | 508                       | .25                | 60,000   | 676                       | 1.48 $\frac{1}{2}$ | 40,000   | 2,875                     |
| .36                            | 40,000   | 589                       | .36                | 40,000   | 946                       | 1.48 $\frac{1}{2}$ | 40,000   | 2,785                     |
| *2.00                          | 60,000   | 432                       | *2.35              | 60,000   | 290                       | .82                | 80,000   | 2,705                     |
| .86 $\frac{1}{2}$              | 40,000   | 1,091                     | .88                | 40,000   | 1,720                     | .72                | 80,000   | 2,476                     |
| <b>per ton of 2,240 pounds</b> |  |                           |                    |  |                           |                    |  |                           |
| .97                            | —  | 640                       | .97                | —  | 808                       | 2.80               | —  | 2,915                     |
| .99 $\frac{1}{2}$              | —  | 810                       | .99 $\frac{1}{2}$  | —  | 1,134                     | 2.80               | —  | 2,697                     |
| 1.03 $\frac{1}{2}$             | —  | 940                       | 1.03 $\frac{1}{2}$ | —  | 1,245                     | 2.80               | —  | 2,782                     |
| .46                            | 24,000   | 488                       | .46                | 24,000   | 803                       | 1.50               | 24,000   | 2,882                     |
| .53                            | 24,000   | 677                       | .53                | 24,000   | 967                       | 1.50               | 24,000   | 2,691                     |
| .46                            | 24,000   | 1,029                     | .46                | 24,000   | 1,197                     | 1.50               | 24,000   | 2,827                     |
| .56                            | 24,000   | 1,129                     | .56                | 24,000   | 1,298                     | 1.50               | 24,000   | 2,763                     |

# THE CANADIAN INDUSTRIAL FIELD

STATEMENT OF RAILWAY FREIGHT RATES ON A NUMBER OF THE PRINCIPAL COMMODITIES  
PORTS OF  
Rates are in dollars and cents per hundred  
TO PORTS OF EXPORT

| Commodity                               | From producing point      | MONTREAL, QUE.     |  |                           | QUEBEC, QUE.       |  |                           |
|---|---------------------------|--------------------|--|---------------------------|--------------------|--|---------------------------|
|   |                           | Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port | Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port |
| Shoes, rubber soled, carloads.          | Granby, Que. ....         | .36                | 20,000   | 54                        | .56 $\frac{1}{2}$  | 20,000   | 216                       |
|   | Toronto, Ont. ....        | .63                | 20,000   | 334                       | .65                | 20,000   | 503                       |
|   | Montreal, Que. ....       |                    |  |                           | .26 $\frac{1}{2}$  | 24,000   | 172                       |
|   | Kitchener, Ont. ....      | .74 $\frac{1}{2}$  | 24,000   | 397                       | .74 $\frac{1}{2}$  | 20,000   | 565                       |
|   | Guelph, Ont. ....         | .79                | 24,000   | 383                       | .74 $\frac{1}{2}$  | 24,000   | 551                       |
| Stoves, electric, carloads.             | Ottawa, Ont. ....         | .36 $\frac{1}{2}$  | 20,000   | 116                       | .45                | 20,000   | 268                       |
|   | Renfrew, Ont. ....        | .43                | 20,000   | 164                       | .45                | 20,000   | 323                       |
|   | Toronto, Ont. ....        | .44                | 20,000   | 334                       | .44                | 20,000   | 503                       |
|   | London, Ont. ....         | .46                | 20,000   | 445                       | .46                | 20,000   | 614                       |
|   | Weston, Ont. ....         | .44                | 20,000   | 343                       | .44                | 20,000   | 511                       |
| Sugar, carloads.                        | Halifax, N.S. ....        | .48                | 24,000   | 803                       | .45                | 24,000   | 665                       |
|   | Saint John, N.B. ....     | .48                | 24,000   | 488                       | .44                | 24,000   | 497                       |
|   | Montreal, Que. ....       | .42                | 40,000   | 533                       | .42                | 40,000   | 172                       |
|   | Wallaceburg, Ont. ....    | 1.99               | 24,000   | 2,175                     | 2.05               | 24,000   | 701                       |
|   | Raymond, Alta. ....       |                    |  |                           |                    |  | 2,322                     |
| Tires, rubber, carloads.                | Montreal, Que. ....       | —                  | —  | —                         | .22 $\frac{1}{2}$  | 20,000   | 172                       |
|   | Toronto, Ont. ....        | .52                | 20,000   | 334                       | .60                | 20,000   | 503                       |
|   | Kitchener, Ont. ....      | .56                | 20,000   | 397                       | .64                | 20,000   | 565                       |
| Tools, machine, less carloads.          | Montreal, Que. ....       | —                  | —  | —                         | .22 $\frac{1}{2}$  | —  | 172                       |
|   | Brantford, Ont. ....      | .64                | —  | 394                       | .64                | —  | 562                       |
|   | Dundas, Ont. ....         | .64                | —  | 375                       | .64                | —  | 545                       |
|   | Hespeler, Ont. ....       | .79                | —  | 391                       | .81                | —  | 560                       |
| Twine, binder, carloads.                | Montreal, Que. ....       | —                  | —  | —                         | .19                | 24,000   | 172                       |
|   | Hamilton, Ont. ....       | .31 $\frac{1}{2}$  | 24,000   | 373                       | .31 $\frac{1}{2}$  | 24,000   | 542                       |
|   | Brantford, Ont. ....      | .31 $\frac{1}{2}$  | 24,000   | 394                       | .31 $\frac{1}{2}$  | 24,000   | 562                       |
|   | Welland, Ont. ....        | .31 $\frac{1}{2}$  | 24,000   | 414                       | .31 $\frac{1}{2}$  | 24,000   | 582                       |
| Underwear, less carloads.               | Truro, N.S. ....          | .92                | —  | 739                       | .86                | —  | 600                       |
|   | Windsor, N.S. ....        | 1.20               | —  | 798                       | 1.14               | —  | 660                       |
|   | Moncton, N.B. ....        | .92                | —  | 615                       | .84                | —  | 476                       |
|   | Hamilton, Ont. ....       | .82 $\frac{1}{2}$  | —  | 373                       | .82 $\frac{1}{2}$  | —  | 542                       |
|   | Salt, Ont. ....           | .94                | —  | 399                       | .94                | —  | 559                       |
|   | Woodstock, Ont. ....      | .97                | —  | 416                       | .97                | —  | 585                       |
|   | Carleton Place, Ont. .... | .65                | —  | 149                       | .70                | —  | 320                       |
| Varnish, carloads.                      | Montreal, Que. ....       | —                  | —  | —                         | .19                | 30,000   | 172                       |
|   | Toronto, Ont. ....        | .44                | 30,000   | 334                       | .44                | 30,000   | 503                       |
|   | Windsor, Ont. ....        | .49 $\frac{1}{2}$  | 30,000   | 555                       | .49 $\frac{1}{2}$  | 30,000   | 724                       |
|   | Winnipeg, Man. ....       | 1.18               | 30,000   | 1,355                     | 1.18               | 30,000   | 1,349                     |
| Wallpaper, carloads.                    | Montreal, Que. ....       | —                  | —  | —                         | .19                | 30,000   | 172                       |
|   | Toronto, Ont. ....        | .44                | 30,000   | 334                       | .44                | 30,000   | 503                       |
| Whiskey, and spirits, carloads.         | St. Hyacinthe, Que. ....  | .34 $\frac{1}{2}$  | 24,000   | 36                        | .41 $\frac{1}{2}$  | 30,000   | 136                       |
|   | Montreal, Que. ....       | —                  | —  | —                         | .19                | 30,000   | 172                       |
|   | Prescott, Ont. ....       | .36 $\frac{1}{2}$  | 30,000   | 135                       | .41 $\frac{1}{2}$  | 30,000   | 296                       |
|   | Toronto, Ont. ....        | .44                | 30,000   | 334                       | .44                | 30,000   | 503                       |
|   | Waterloo, Ont. ....       | .44                | 30,000   | 398                       | .44                | 30,000   | 545                       |
|   | Walkerville, Ont. ....    | .49 $\frac{1}{2}$  | 30,000   | 554                       | .49 $\frac{1}{2}$  | 30,000   | 722                       |
| Wire goods, less carloads.              | Drummondville, Que. ....  | .51                | —  | 65                        | .62                | —  | 107                       |
|   | Ottawa, Ont. ....         | .58                | —  | 116                       | .70                | —  | 268                       |
|   | Hamilton, Ont. ....       | .82 $\frac{1}{2}$  | —  | 373                       | .82 $\frac{1}{2}$  | —  | 542                       |
|   | Markham, Ont. ....        | 1.04               | —  | 479                       | 1.04               | —  | 647                       |
| Wrought iron pipe and tubing, carloads. | Montreal, Que. ....       | —                  | —  | —                         | .15                | 36,000   | 172                       |
|   | Welland, Ont. ....        | .25 $\frac{1}{2}$  | 60,000   | 414                       | .30                | 36,000   | 532                       |
|   | Guelph, Ont. ....         | .25 $\frac{1}{2}$  | 60,000   | 383                       | .30                | 36,000   | 551                       |

Prepared by Canadian Manufacturers' Association.

# TRANSPORTATION IN CANADA

**MANUFACTURED IN CANADA FOR EXPORT, FROM POINTS OF PRODUCTION TO CANADIAN EXPORT**

pounds, except where otherwise indicated.

**FROM CANADA**

| SAINT JOHN, N.B.   |  |                           | HALIFAX, N.S.      |  |                           | VANCOUVER, B.C.    |  |                           |
|--------------------|--|---------------------------|--------------------|--|---------------------------|--------------------|--|---------------------------|
| Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port | Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port | Rates per 100 lbs. | Minimum weight per carload for which rate will apply | Distance in miles to port |
| .78½               | 20,000   | 675                       | .78½               | 20,000   | 843                       | 2.19               | 20,000   | 2,960                     |
| .87                | 24,000   | 87                        | .87                | 24,000   | 1,134                     | 2.10               | 20,000   | 2,697                     |
| .78                | 20,000   | 488                       | .78                | 20,000   | 803                       | 2.10               | 20,000   | 2,832                     |
| .87                | 24,000   | 875                       | .87                | 24,000   | 1,197                     | 2.10               | 20,000   | 2,758                     |
| .87                | 24,000   | 861                       | .87                | 24,000   | 1,183                     | 2.10               | 20,000   | 2,743                     |
| .46                | 20,000   | 589                       | .46                | 20,000   | 910                       | 1.70               | 20,000   | 2,761                     |
| .53                | 20,000   | 677                       | .53                | 20,000   | 967                       | 1.70               | 20,000   | 2,691                     |
| .46                | 20,000   | 810                       | .46                | 20,000   | 1,134                     | 1.70               | 20,000   | 2,697                     |
| .48                | 20,000   | 940                       | .48                | 20,000   | 1,245                     | 1.70               | 20,000   | 2,783                     |
| .46                | 20,000   | 815                       | .46                | 20,000   | 1,143                     | 1.70               | 20,000   | 2,689                     |
| .30                | 24,000   | 279                       | —                  | —  | —                         | 1.68               | 24,000   | 3,551                     |
| .38                | 40,000   | 488                       | .38                | 40,000   | 803                       | 1.50               | 24,000   | 3,349                     |
| .44                | 40,000   | 1,008                     | .44                | 40,000   | 1,332                     | 1.50               | 24,000   | 2,890                     |
| 2.10               | 24,000   | 2,643                     | 2.12               | 24,000   | 2,996                     | 1.16               | 24,000   | 795                       |
| .65                | 20,000   | 488                       | .65                | 20,000   | 803                       | 1.75               | 24,000   | 2,882                     |
| .66                | 20,000   | 810                       | .66                | 20,000   | 1,134                     | 1.75               | 24,000   | 2,697                     |
| .66                | 20,000   | 875                       | .66                | 20,000   | 1,197                     | 1.75               | 24,000   | 2,758                     |
| .65                | —  | 488                       | .65                | —  | 803                       | 2.55               | —  | 2,882                     |
| .66                | —  | 1,026                     | .66                | —  | 1,194                     | 2.55               | —  | 2,922                     |
| .66                | —  | 1,008                     | .66                | —  | 1,176                     | 2.55               | —  | 2,804                     |
| .94½               | —  | 1,023                     | .94½               | —  | 1,191                     | 2.55               | —  | 2,797                     |
| .46                | 24,000   | 488                       | .46                | 24,000   | 803                       | 1.00               | 30,000   | 2,882                     |
| .33                | 24,000   | 850                       | .33                | 24,000   | 1,173                     | 1.00               | 30,000   | 2,732                     |
| .33                | 24,000   | 1,026                     | .33                | 24,000   | 1,194                     | 1.00               | 30,000   | 2,822                     |
| .33                | 24,000   | 1,046                     | .33                | 24,000   | 1,213                     | 1.00               | 30,000   | 2,842                     |
| .58                | —  | 214                       | .38                | —  | .65                       | 3.16               | —  | 3,489                     |
| .66                | —  | 273                       | .34                | —  | .47                       | 4.02               | —  | 3,543                     |
| .44                | —  | 90                        | .54                | —  | 189                       | 3.12               | —  | 3,362                     |
| .99½               | —  | 850                       | .99½               | —  | 1,173                     | 2.80               | —  | 2,732                     |
| .99                | —  | 863                       | .99                | —  | 1,199                     | 2.80               | —  | 2,746                     |
| 1.03½              | —  | 894                       | 1.03½              | —  | 1,218                     | 2.80               | —  | 2,776                     |
| 1.06½              | —  | 635                       | 1.06½              | —  | 988                       | 2.80               | —  | 2,733                     |
| .46                | 30,000   | 488                       | .46                | 30,000   | 803                       | 1.50               | 30,000   | 2,882                     |
| .46                | 30,000   | 810                       | .46                | 30,000   | 1,134                     | 1.50               | 30,000   | 2,697                     |
| .51½               | 30,000   | 1,033                     | .51½               | 30,000   | 1,355                     | 1.50               | 30,000   | 2,716                     |
| 1.30               | 30,000   | 1,827                     | 1.32               | 30,000   | 1,995                     | 1.71               | 30,000   | 1,465                     |
| .46                | 30,000   | 488                       | .46                | 30,000   | 803                       | 1.70               | 30,000   | 2,882                     |
| .46                | 30,000   | 810                       | .46                | 30,000   | 1,134                     | 1.70               | 30,000   | 2,697                     |
| .65                | 30,000   | 464                       | .65                | 30,000   | 768                       | 1.84               | 30,000   | 2,936                     |
| .65                | 30,000   | 488                       | .65                | 30,000   | 803                       | 1.75               | 30,000   | 2,882                     |
| .46                | 30,000   | 600                       | .46                | 30,000   | 953                       | 1.75               | 30,000   | 2,792                     |
| .46                | 30,000   | 810                       | .46                | 30,000   | 1,134                     | 1.75               | 30,000   | 2,697                     |
| .46                | 30,000   | 1,033                     | .46                | 30,000   | 1,201                     | 1.75               | 30,000   | 2,804                     |
| .51½               | 30,000   | 1,186                     | .51½               | 30,000   | 1,354                     | 1.75               | 30,000   | 2,973                     |
| .97                | —  | 460                       | .97                | —  | 738                       | 2.92               | —  | 2,975                     |
| .99½               | —  | 589                       | .99½               | —  | 910                       | 2.80               | —  | 2,761                     |
| .99½               | —  | 850                       | .99½               | —  | 1,173                     | 2.80               | —  | 2,732                     |
| 1.11               | —  | 1,110                     | 1.11               | —  | 1,278                     | 2.80               | —  | 2,894                     |
| .24                | 36,000   | 488                       | .24                | 36,000   | 803                       | .72                | 80,000   | 2,882                     |
| .30                | 36,000   | 1,046                     | .30                | 36,000   | 1,213                     | .72                | 80,000   | 2,842                     |
| .30                | 36,000   | 861                       | .30                | 36,000   | 1,183                     | .72                | 80,000   | 2,743                     |

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## THE CANADIAN INDUSTRIAL FIELD

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### Electric Railways

Electric street railways have proved to be a necessity in modern urban centres and in 1929, 836,729,851 passengers and 3,662,765 tons of freight were carried. Some systems are owned and operated by the cities in which they are located but most systems are owned by private companies operating under a city franchise. In 1929 2,202 miles of main track were in use, with a total of 4,183 passenger cars and 602 baggage and freight cars.

### 3. HIGHWAYS

On account of the immense tract of land and a relatively small and scattered population, the highways of Canada constitute a tremendous auxiliary to the railway systems.

In 1919 the Dominion Government authorized the expenditure of \$20,000,000 in the form of grants to the various provinces for the purpose of building new highways and improving existing highways in Canada. The Minister of Railways and Canals and the various provincial Government departments were entrusted with the various road projects and when the original Act was extended from 1924 to March 31st, 1928, it made possible projected road agreements covering a total distance of 8,753 miles.

In 1929 the highways of Canada totalled 425,042 miles, of which 63,930 miles were surfaced and 361,112 miles unsurfaced roads. Of the total surfaced roads 54,644 miles were gravel and 9,286 miles paved roads.

The following table of mileage indicates surfaced and unsurfaced roads, by provinces:—

| Provinces                 | Surfaced |       | Un-surfaced | Total   |
|---------------------------|----------|-------|-------------|---------|
|                           | Gravel   | Paved |             |         |
| Prince Edward Island..... | 21       | ..... | 3,629       | 3,650   |
| Nova Scotia.....          | 987      | 39    | 13,442      | 14,468  |
| New Brunswick.....        | 1,098    | 25    | 10,521      | 11,644  |
| Quebec.....               | 8,292    | 2,274 | 20,558      | 31,124  |
| Ontario.....              | 36,383   | 6,536 | 21,265      | 64,184  |
| Manitoba.....             | 1,779    | 46    | 68,455      | 70,280  |
| Saskatchewan.....         | 1,000    | ..... | 151,000     | 152,000 |
| Alberta.....              | 614      | ..... | 59,626      | 60,240  |
| British Columbia.....     | 4,470    | 366   | 12,616      | 17,452  |
|                           | 54,644   | 9,286 | 361,112     | 425,042 |

#### 4. CANALS

There are six canal systems controlled by the Dominion Government, with a total of 117 miles of constructed canals linking up waterways systems of 1,594 miles. They are all located in Eastern Canada.

The principal group is that on the St. Lawrence, consisting of a series of eight canals joined by navigable stretches of the river and the Great Lakes, with a total difference of 553 feet in levels overcome by locks between Montreal and Lake Superior.

The Lachine canal, overcoming the Lachine Rapids, has 5 locks, 270 feet by 45 feet and 14 feet depth of water.

The Soulanges Canal, at the Cascades, Cedars, and Coteau Rapids, is 14 miles long and has 5 locks, 280 feet by 45 feet with a depth of 15 feet.

The Cornwall Canal is 11 miles long and has 6 locks, 270 feet by 45 feet with 14 feet depth and passes round the Long Sault Rapids.

The Williamsburg Canals, a series of three at Farran's Point, Rapide Plat, and Galops, are 26 miles long and have 6 locks, 270 feet by 45 feet with a depth of 14 feet.

The Welland Ship Canal, connecting Lake Ontario with Lake Erie when completed in 1932 will be 25 miles long with 7 locks of 800 feet by 80 feet with a depth of 27 feet. This overcomes a fall of 325 feet on the Niagara River. The present Welland Canal is 27 miles long with 26 locks of 270 feet by 45 feet with a depth of 14 feet.

The Sault Ste. Marie Canal on the Canadian side consists of one lock 900 feet by 60 feet with a depth of 19 feet and overcomes the St. Marys Rapids with a difference of 19 feet between the levels of Lake Huron and Lake Superior. There are 4 locks on the United States side of the river and both the Canadian and United States systems are free to the vessels of either nation.

The water-route from Montreal to New York is via the Richelieu River and the Chambly Canal. At the rapids of St. Ours there is one lock 200 feet by 45 feet, with a depth of 7 feet, and the section from Chambly to St. Jean is covered by a canal with 9 locks, 118 feet by 22 feet with a depth of 7 feet. The route continues through Lake Champlain and the Hudson River to New York.

The Ottawa Canals provide a waterway from Montreal to Ottawa via the Ottawa River. The Ste. Anne Lock at the rapids near the junction of the St. Lawrence and Ottawa Rivers is 200 feet long by 45 feet and 9 feet deep. The Carillon Canal at Carillon Rapids and the Grenville Canal at the Long Sault Rapids have 2 and 5 locks respectively of 200 feet by 45 feet and 9 feet deep.

The Rideau Canal, provides a waterway from Ottawa to Kingston with a branch to the town of Perth. It is 126 miles long with 47 locks, 134 feet by 33 feet with a depth of 5 feet, and the branch from Rideau Lake to Perth is 7 miles long with 2 locks of the same dimensions but  $6\frac{1}{2}$  feet deep.

The Trent Canal, from Trenton to Port Severn is completed only as far as Sparrow Lake, but motor vessels of 5 tons can complete the passage to Port Severn by means of marine railways at the rapids. There are approximately 210 miles completed with 41 locks varying from 134 feet to 175 feet long, 33 feet wide and with depths of from 6 to 8 feet. The lock at Port Severn is 100 feet by 25 feet and 6 feet deep. The branch running from Sturgeon Lake to Port Perry on Scugog Lake is 35 miles long with one lock 142 feet by 33 feet and 6 feet deep. At Peterborough there is an hydraulic lift lock capable of lifting an 800 ton vessel 65 feet vertically. Forming part of this system is the Murray Canal, 5 miles long and 11 feet deep, from Trenton on the Bay of Quinte to Lake Ontario.

The St. Peters Canal, on Cape Breton Island, joins St. Peters Bay with Bras d'Or Lake. It is half a mile long and has one tidal lock 300 feet by 48 feet and 18 feet deep.

St. Andrews Lock at the rapids on the Red River, 15 miles north of Winnipeg is 215 feet by 45 feet with a depth of 17 feet.

## TRANSPORTATION IN CANADA

CANALS OF CANADA, LENGTH AND LOCK DIMENSIONS, 1928

| Names                     | Location   | Length<br>in<br>miles. | Locks |                    |       |
|---------------------------|--|------------------------|-------|--------------------|-------|
|                           |  |                        | No.   | Minimum dimensions |       |
|                           |  |                        |       | Length             | Width |
| St. Lawrence—             |  |                        |       |                    |       |
| Lachine.....              | Montreal to Lachine.....                                   | 8.50                   | 5     | 270                | 45    |
| Soulanges.....            | Cascades Pt.-Coteau Ldg.....                               | 14.00                  | 5     | 280                | 45    |
| Cornwall.....             | Cornwall to Dickinson's Ldg.....                           | 11.25                  | 6     | 270                | 45    |
| Farran's Point.....       | Rapide Plat.....   | 1.25                   | 1     | 800                | 50    |
| Rapide Plat.....          | Rapide Plat to Morrisburg.....                             | 3.66                   | 2     | 270                | 45    |
| Galops.....               | Iroquois to Cardinal.....                                  | 7.33                   | 3     | 800                | 50    |
| Welland.....              | Port Dalhousie, L. Ontario, to Port Colborne, L. Erie..... | 26.75                  | 26    | 270                | 45    |
| Sault Ste. Marie.....     | St. Mary's Rapids, 47 miles W. of Lake Huron.....          | 1.30                   | 1     | 900                | 60    |
| Richelieu River—          |  |                        |       |                    |       |
| St. Ours Lock.....        | St. Ours, Que.....   | 0.12                   | 1     | 200                | 45    |
| Chambly.....              | Chambly to St. Johns, Que.....                             | 12.00                  | 9     | 118                | 22.5  |
| Ottawa and Rideau Rivers— |  |                        |       |                    |       |
| Ste. Anne Lock.....       | Junction of St. Lawrence and Ottawa Rivers.....            | 0.12                   | 1     | 200                | 45    |
| Carillon.....             | Carillon Rapids, Ottawa R.....                             | 0.75                   | 2     | 200                | 45    |
| Grenville.....            | Long Sault Rapids, Ottawa R.....                           | 5.75                   | 5     | 200                | 45    |
| Rideau.....               | Ottawa to Kingston.....                                    | 126.25                 | 47    | 134                | 33    |
|                           | Rideau Lake to Perth (Tay Branch).....                     | 7.00                   | 2     | 134                | 33    |
| Miscellaneous—            |  |                        |       |                    |       |
| Trent.....                | Trenton to Peterborough Lock, Peterborough.....            | 89.0                   | 18    | 175                | 33    |
|                           | Peterborough Lock to head of L. Couchiching.....           | 114.6                  | 23    | 134                | 33    |
|                           | Sturgeon L. to Port Perry (Scugog Branch).....             | 35.0                   | 1     | 142                | 33    |
|                           | Port Perry Lock.....                                       |                        | 1     | 100                | 25    |
| Murray.....               | Bay of Quinte to L. Ontario.....                           | 5.17                   | 0     |                    | 11    |
| St. Peters.....           | St. Peters' Bay to Bras d'Or Lake, Cape Breton, N.S.....   | 0.49                   | 1     | 300                | 48    |
| St. Andrews.....          | Red River, 15 miles north of Winnipeg.....                 |                        | 1     | 215                | 45    |

## 5. PORTS AND HARBOURS

The principal ports in Canada are administered by harbour commissions, each commission being constituted by a special act of Parliament. The commissions have jurisdiction over all Crown property in their harbour but no property may be disposed of in any way without the consent of the Governor in Council. They have powers to make by-laws for the government of harbour properties and services and for the imposition and collection of rates on vessels and penalties for infraction of their by-laws. They also control the expenditure of revenue so received. All commissions are subject to the jurisdiction of the Minister of Marine in all matters.

Other harbours in the Dominion have been proclaimed public harbours under the Canada Shipping Act, and have an officer known as Harbour Master in charge of harbour properties and services. He operates under the control of the Department of Marine and is paid from fees levied on vessels under the terms of the Act. Harbours administered on this principle in Canada number 170.

#### Atlantic Ports

The chief Canadian ports on the Atlantic seaboard are Montreal, Quebec, Halifax, Saint John, and Sydney. Halifax and Saint John are the two principal winter ports handling as additional traffic that which normally goes through Montreal and Quebec during the open season on the St. Lawrence River. Sydney serves the great coal and iron industry centered in that district.

Montreal is second only to New York on the North American continent as a port, despite the fact that it is closed for over four months during the year. More than 100 ocean vessels can be accommodated in the docks and there is over 16 miles of waterfront. It has most modern facilities for the storing and handling of grain and will in the near future have grain elevators with a capacity of 20,000,000 bushels.

The ship channel between Montreal and Quebec varies in depth from about 35 feet at high tide in the tidal portions of the river to 30 feet at ordinary low water, with a minimum width of 300 feet enlarged up to 800 feet at the bends and difficult places.

Quebec, approximately 160 miles distant from Montreal, with its outstanding bridge spanning the river, is the other important port of the St. Lawrence. It is a port of call for the ocean lines terminating at Montreal, and the terminal for the large liners which cannot go up the ship channel. A grain elevator with a capacity of 2,000,000 bushels and berths with depths varying from 25 feet to 40 feet are available for 25 vessels.

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## TRANSPORTATION IN CANADA

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Halifax harbour is open all the year round and is one of the safest of world harbours. It has space and depth of water sufficient for a large number of vessels. It is proposed to deepen alongside the landing quays from their present 35 feet to 45 feet.

Saint John is also a winter port open all year. The main channel has a depth of 28 feet towards the head of the harbour and the harbour itself has depths varying from 50 feet to 70 feet. The depth of water alongside the wharves at Saint John West is from 26 feet to 30 feet.

### Pacific Ports

On the Pacific coast Canada has but two large seaports, Vancouver and Victoria. Prince Rupert is a natural harbour which should gain in importance as northern British Columbia is developed and new outlets for the grain produced in the Peace River farming areas are opened.

Vancouver is the western terminal of the Canadian National and Canadian Pacific railways and has an elevator capacity of over 15,000,000 bushels. Large quantities of British Columbia timber are shipped annually and with cheaper freight rates available through the Panama Canal route to European ports, the growth of Vancouver as a port is assured. The wheat movement through Vancouver in 1917 was only 312,000 bushels but in 1924 it had increased to 53,509,000 bushels, and in 1928 was 93,000,000 bushels. The entrance to the harbour has a minimum depth of 36 feet and the wharves and piers have depths varying from 20 feet to 40 feet.

Victoria has berthing for ocean going ships in the outer harbour where there is a depth of from 26 feet to 33 feet. The harbour is divided into 3 parts, the outer harbour, the inner harbour, and the upper inner harbour. Depths along the wharves are about 20 feet.

### Inland Ports

The Great Lakes and St. Lawrence River constitute one of the most important factors in the economic development of Canada. The traffic over this route has had such a rapid growth that there is now an insistent demand for better facilities resulting in numerous boards, commissions and committees at present considering the St. Lawrence Deep Waterways problem. The shipping on lakes and rivers for 1929 amounted to over 75,000 vessels with 39,326,700 tons register being entered inwards and outwards from the various inland ports.

The principal inland ports of Canada are Toronto on Lake Ontario, Sarnia on the east side of the St. Clair River, Fort William and Port Arthur on Lake Superior and Port McNicoll on Georgian Bay. They are all dependent on the section of the St. Lawrence waterway from Montreal to the head of Lake Superior.

From Montreal, Lake Ontario is reached by canals and stretches of the river which are navigable. The Welland Canal between Lake Ontario and Lake Erie has a depth of 14 feet, which will be deepened to 27 feet when the new canal is completed by 1932. Only vessels of under 14 feet draught and about 2,300 tons can use this section in the meantime.

In the St. Lawrence Deep Waterways scheme it is proposed to deepen this channel to 27 feet which would enable the large upper lake steamers of 10,000 to 13,000 tons to move from Fort William to tide water at Montreal thereby making great savings in freight rates possible. The canal at Sault Ste. Marie connecting Lake Huron with Lake Superior is 19 feet deep.

From Lake Superior to the ocean there are 74 miles of canals with 48 locks which under the new scheme would be reduced to 55 miles of canals and 18 locks.

## TRANSPORTATION IN CANADA

Toronto harbour has two entrances, the east one having a minimum depth of 14 feet and the west 12 feet. The greatest depths in this harbour are from 27 feet to 30 feet and the ship channel is 400 feet wide with a minimum depth of 22 feet. Central harbour terminal wharves have a depth of 24 feet which is to be increased to 30 feet.

Sarnia has a depth of 21 feet alongside the numerous wharves and the depth for anchorage varies from 35 feet in the channel to 9 feet in the bay.

Fort William has three natural channels of the harbour, with widths of 600, 500 and 400 feet, all dredged to a depth of 25 feet. The wharves have a depth of 22 feet alongside and the Empire and Northwestern elevators 25 feet.

Port Arthur has a channel 350 feet wide leading into main harbour centre and a depth of 20 to 21 feet in the harbour. Main harbour south has a channel 375 feet wide and a depth of 25 feet with harbour depths of 19 feet to 25 feet, while the depths in main harbour north range from 12 feet to 24 feet.

Port McNicoll has an artificial basin 800 yards long and 200 yards wide with concrete docks on the east and west sides. The depth alongside is 24 feet.

COMPARATIVE TABLE

| Port                   | Harbour<br>depths<br>in ft. | Channel          |                  | Wharves<br>depth<br>in feet |
|------------------------|-----------------------------|------------------|------------------|-----------------------------|
|                        |                             | Width<br>in feet | Depth<br>in feet |                             |
| Toronto.....           | 27-30                       | 400              | 22               | †24                         |
| Sarnia.....            | 9                           | .....            | 35               | 21                          |
| Fort William*.....     | 21                          | 600              | 25               | 22-25                       |
|                        |                             | 500              |                  |                             |
|                        |                             | 400              |                  |                             |
| Port Arthur—           |                             |                  |                  |                             |
| Main harb. centre..... | 20-21                       | 350              | .....            | .....                       |
| "    south.....        | 19-25                       | 375              | 25               | .....                       |
| "    north.....        | 12-24                       | .....            | .....            | .....                       |
| Port McNicoll.....     | 24                          | .....            | .....            | 24                          |

†To be increased to 30 ft.

\*Three channels.

**THE CANADIAN INDUSTRIAL FIELD**

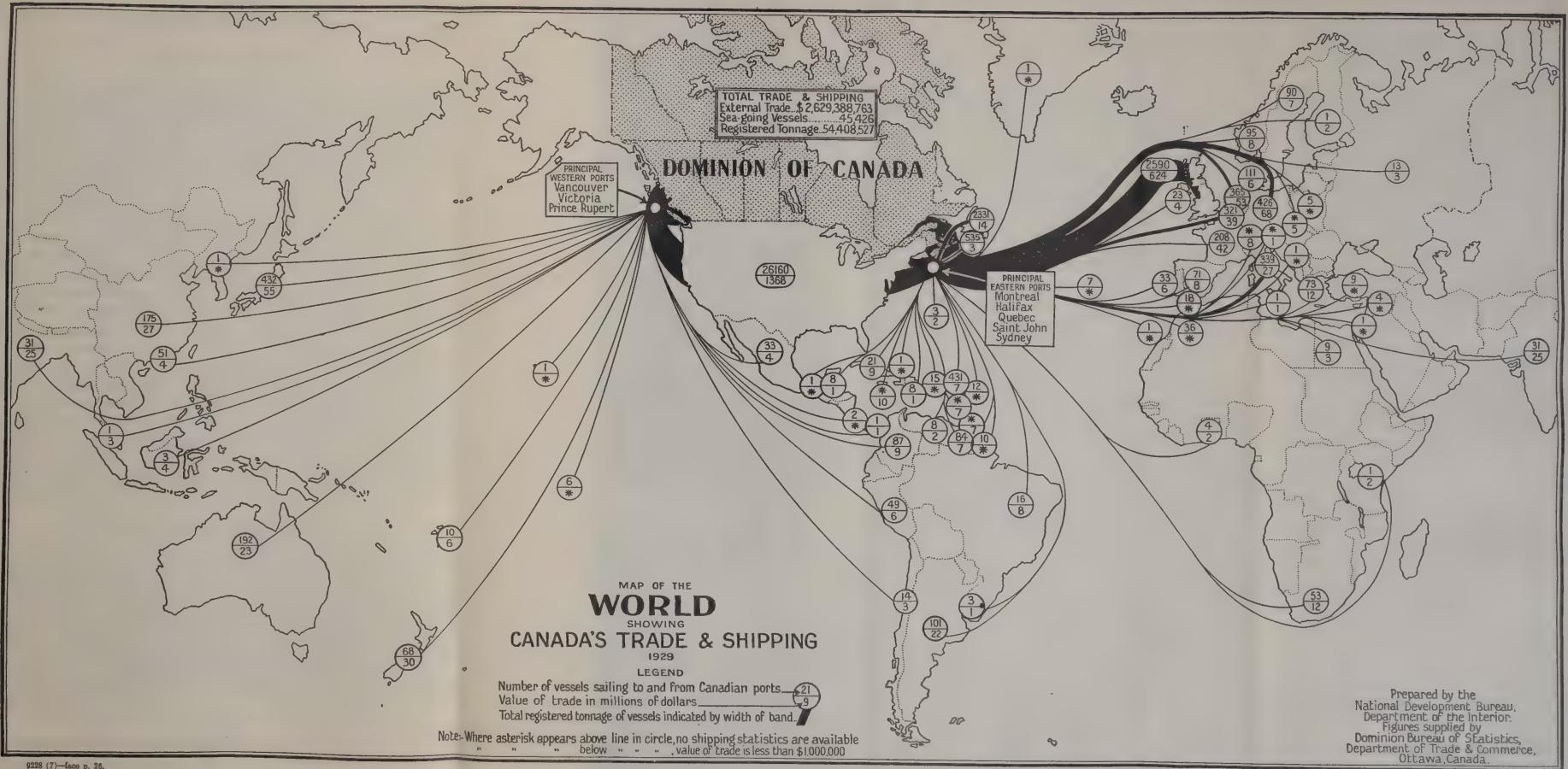
The following tables show shipping at the principal ocean and inland ports for the fiscal years ending March 31, 1927-1928-1929:—

OCEAN PORTS

| Port            | Year | Total Shipping |               |          |               |
|-----------------|------|----------------|---------------|----------|---------------|
|                 |      | Arrived        |               | Departed |               |
|                 |      | Vessels        | Tons Register | Vessels  | Tons Register |
| Montreal.....   | 1927 | 7,264          | 8,130,528     | 7,189    | 8,226,671     |
|                 | 1928 | 7,698          | 9,544,269     | 7,951    | 9,622,323     |
|                 | 1929 | 8,012          | 10,534,794    | 8,047    | 10,546,400    |
| Quebec.....     | 1927 | 2,473          | 3,809,244     | 2,504    | 3,803,791     |
|                 | 1928 | 2,623          | 4,137,343     | 2,671    | 4,148,821     |
|                 | 1929 | 2,685          | 4,723,416     | 2,701    | 4,730,042     |
| Halifax.....    | 1927 | 4,668          | 3,881,052     | 4,275    | 3,807,872     |
|                 | 1928 | 3,720          | 4,062,216     | 3,929    | 4,124,411     |
|                 | 1929 | 3,735          | 4,671,707     | 3,836    | 4,802,734     |
| Saint John..... | 1927 | 2,943          | 1,926,084     | 2,931    | 1,933,711     |
|                 | 1928 | 2,793          | 1,718,076     | 2,853    | 1,733,769     |
|                 | 1929 | 3,131          | 1,859,742     | 3,171    | 1,870,307     |
| Vancouver.....  | 1927 | 15,535         | 9,508,352     | 15,562   | 9,731,507     |
|                 | 1928 | 16,372         | 10,476,153    | 16,574   | 10,542,163    |
|                 | 1929 | 18,148         | 11,897,147    | 17,843   | 11,605,594    |

INLAND PORTS

|                    |      |       |           |       |           |
|--------------------|------|-------|-----------|-------|-----------|
| Port Arthur.....   | 1927 | 1,398 | 3,615,062 | 1,454 | 3,765,194 |
|                    | 1928 | 1,390 | 3,638,161 | 1,514 | 4,435,410 |
|                    | 1929 | 2,019 | 4,484,095 | 2,168 | 4,946,012 |
| Fort William.....  | 1927 | 1,462 | 3,702,837 | 1,405 | 3,757,725 |
|                    | 1928 | 1,459 | 4,268,930 | 1,393 | 3,964,410 |
|                    | 1929 | 1,653 | 4,526,923 | 1,529 | 4,132,748 |
| Toronto.....       | 1927 | 2,561 | 1,816,965 | 2,282 | 1,445,073 |
|                    | 1928 | 2,292 | 1,847,491 | 1,996 | 1,511,158 |
|                    | 1929 | 2,086 | 1,844,523 | 2,016 | 1,773,658 |
| Port McNicoll..... | 1927 | 286   | 795,770   | 281   | 781,705   |
|                    | 1928 | 280   | 773,260   | 287   | 792,718   |
|                    | 1929 | 256   | 729,460   | 256   | 732,371   |
| Sarnia.....        | 1927 | 1,230 | 483,187   | 1,249 | 481,656   |
|                    | 1928 | 1,697 | 617,523   | 1,700 | 599,204   |
|                    | 1929 | 1,760 | 939,609   | 1,765 | 925,954   |





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## TRANSPORTATION IN CANADA

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### 6. STEAMSHIP SERVICES

The Department of Marine administers the general shipping interests of Canada. Administration of the Canada Shipping Act and other acts relating to marine transportation, the construction of lighthouses, ports, harbours, piers, pilotage, the Meteorological Service, river and harbour police, shipwreck inquiries, inspection of ships, radio telegraph stations, etc., are among the most important functions of the department.

There are 21 companies operating steamship services from Montreal, 11 from Quebec, 21 from Halifax, and 14 from Saint John on the Atlantic, and 51 companies from Vancouver on the Pacific—in all over 80 different companies.

Among the largest are the Canadian Pacific Steamships and the Canadian National Steamships. The Canada Steamship Lines operate extensive services on the Great Lakes, the St. Lawrence and other inland waterways. Other principal steamship companies are the Anchor-Donaldson Line, Cunard Line, Houston Line, White Star Dominion Line, Blue Funnel Line and Holland Amerika Line.

Passenger and freight services are maintained to European, United States, West Indian, South American, South African and Australian ports from the Atlantic seaboard and to China, Japan, Mexico, Australia, New Zealand and the Orient generally from the Pacific seaboard, as well as to Great Britain and European ports via the Panama Canal.

### 7. AIR ROUTES AND SERVICES

Civil aviation in Canada dates from the end of the Great War though public attention was first directed to aeronautic activity in the Dominion by the first recorded flight at Petawawa in 1909. Aeronautics is no longer an experiment but a business. Developments during the past few years have demonstrated its utility. A review of the progress made in Canada during the post-war years cannot fail to strengthen the public attitude towards air commerce and to the appreciation of its unlimited possibilities as a benefit to the State.

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## THE CANADIAN INDUSTRIAL FIELD

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Canada, geographically, is a country of great distances. Her cities are separated by vast stretches, and railroads, highways and canals have until recent years been the most important means of transportation. The influence of aviation on such a vast country as a rapid and more direct form of transport has produced a great awakening of interest and enthusiasm probably equalled in no other field of activity.

The Aeronautic Act providing for the administration of aeronautics in Canada became law on the 6th of June, 1919, but it was not till 1927 when legislative recognition was given to civil aviation that the present era of intensive development dates. Enactments of air regulations to protect the public and increase the efficiency and safety of air routes, aerodromes lighting systems, radio direction finding stations and meteorological services have been provided, indicating a permanent and continual advance in aeronautical science.

Under such initial stimulus, followed by the organization of air mail services and aeroplane clubs, commercial aviation has made rapid progress, and in no other country in the world is there possibly a wider and more varied field where it can be proved beyond question that flying can be used to greater advantage than in Canada.

The activities of commercial concerns, provincial and federal government services in transportation in the remoter parts of the country where the needs are greatest for better means of communication are now generally accepted as a necessity and have become a recognized part of every conservation, development and engineering service in the country. The handicaps of winter flying have now been largely overcome and all year round operations of long and difficult flights are undertaken with scheduled regularity.

During 1926, 14 firms were operating aircraft in Canada but by the end of 1929 the total had increased to 89 in addition to 27 registered private owners. A notable advance was also observed for the number of hours flown by aircraft which increased during the three year period from 5,860 hours in 1926 to 79,786 in 1929. A

## TRANSPORTATION IN CANADA

corresponding increase in number of passengers carried during the same period occurred, the total of 6,436 persons carried in 1926 being increased to 124,751 during 1929.

The phenomenal growth in civil flying is indicated by the following figures:—

| —                             | 1928      | 1929      |
|-------------------------------|-----------|-----------|
| Operating firms.....          | 53        | 85        |
| Hours flown.....              | 43,071    | 79,786    |
| Passengers carried.....       | 74,669    | 124,751   |
| Passenger miles.....          | 2,883,782 | 6,114,997 |
| Freight carried (pounds)..... | 2,404,682 | 3,903,908 |
| Mail (pounds).....            | 316,631   | 430,636   |
| Licensed airharbours.....     | 44        | 77        |
| “ aircraft.....               | 264       | 445       |
| “ pilots (commercial).....    | 250       | 445       |
| “ pilots (private).....       | 148       | 354       |
| “ air engineers.....          | 200       | 306       |

The chief outlet for commercial flying, other than government contracts, has been the transportation of men and supplies to the northern mining camps. Journeys which formerly occupied weeks of laborious travel are now undertaken in a few hours time and with greater economy in most instances.

The development of air mail services to connect the principal cities of the Dominion and serve the needs of isolated communities is now established. During the winter of 1927-28 the Post Office Department let contracts for 5 mail services serving points on the lower St. Lawrence and Magdalen Islands, Pelee Island and Red Lake districts.

Air mail services have been inaugurated and maintained with scheduled regularity between the following points:—

| Name of route  | Contractors                               | Duration of service                         | Frequency of service                   | Flying distance, miles |
|--|---|---|--|------------------------|
| Montreal-Quebec.....   | Canadian Airways Ltd., Montreal.          | All the year round.....                     | Daily except Saturday and Sunday.      | 134                    |
| Montreal-Rimouski.....                                       | “ “                                       | During open season of navigation (30 weeks) | 2 trips per week outgoing, 1 incoming. | 330                    |
| Montreal-Ottawa.....   | “ “                                       | “ “   | 1 trip per week each way.              | 110                    |
| Montreal-Detroit via—<br>Toronto, Hamilton, London, Windsor. | “ “                                       | All the year round.....                     | 6 trips per week each way.             | 557½                   |
| Montreal-Albany.....   | Canadian Colonial Airways Ltd., Montreal. | “ “   | 6 trips per week one way.              | 200                    |

## THE CANADIAN INDUSTRIAL FIELD

| Name of route   | Contractors  | Duration of service   | Frequency of service   | Flying miles, miles |
|---|--|---|--|---------------------|
| Toronto-Buffalo.....  | Canadian Flying Service Ltd., Toronto, Ont.        | All the year round.....   | 6 trips per week one way.  | 100                 |
| Quebec, P.Q.-Seven Is. via—<br>Betsiamites, Chute aux Outardes, Franquelin, Baie St. Nicholas, Godbout, Baie de la Trinité, Pentecost Riv., Shelter Bay, Clark City.  | Canadian Airways Ltd...                            | During closed season of navigation (approx. 15th Dec. to 15th April). | 2 round trips per week   | 350                 |
| Seven Islands, P.Q.-Anticosti.  | " "  | During closed season of navigation (approx. 15th Dec. to 15th April). | 2 round trips per month.   | 120                 |
| Montreal-Moncton via Saint John.  | Canadian Airways Ltd....                           | Temporary agreement...  | Daily except Saturday and Sunday.  | 467                 |
| Amos-Siscoe, P.Q.....   | General Airways Ltd.....                           | All the year round.....   | 15th May to 15th Nov., tri-weekly, 16th Nov. to 15th Dec., weekly, 16th Dec. to 15th Apr., semi-weekly, 16th Apr. to 14th May, weekly. | 42                  |
| Amos-Chibougamau.....   | Compagnie Aerienne Franco Canadienne.              | All the year round.....   | Two round trips per month.   | 200                 |
| Moncton, N.B.-Magdalen Is.  | Canadian Airways Ltd....                           | During closed season of navigation (approx. 15th Dec. to 15th April). | 1 round trip per week.   | 200                 |
| Moncton to Charlottetown..<br>Leamington, Ont.-Pele Is. Ont.  | National Air Transport Ltd., Canadian Airways Ltd. | Temporary agreement...  | Weekly.....<br>" " " " Daily except Sunday.  | 110<br>22           |
| Sioux Lookout-Red Lake.   | Canadian Airways Ltd. Western section.....         | All the year round.....   | Semi weekly.   | 325                 |
| Lac du Bonnet, Man.-Wadhope, Man., Bissett, Man., McMurray, Alta.-Aklavik, N.W.T. via Chipewyan, Fitzgerald, Fort Smith, Resolution, Hay River, Providence, Simpson, Wrigley, Norman, Good Hope, Arctic Red River, Macpherson, Aklavik. | Commercial Airways Ltd., Edmonton.                 | " "   | 2 round trips per week.  | 82                  |
| Winnipeg, Man.-Calgary, Alta., Regina, Moose Jaw, Medicine Hat.   | Canada Airways Ltd., Winnipeg.                     | " "   | Weekly.  | 1,676               |
| Regina-Moose Jaw, Sask. to Edmonton, Alta. via Saskatoon, N. Battleford.  | " "  | " "   | " "  | 428                 |
| Peace River-North Vermilion.  | Commercial Airways Ltd., Edmonton.                 | All the year round.....   | 16 return trips during winter.   | 167                 |
| Whitehorse-Dawson.....  | Treadwell Yukon Co.....                            | Special (Sticker) Service   |  | 273                 |

### SUMMARY OF CONTRACT AIR MAIL SERVICES FOR THE YEAR 1929

| Service   | Route miles | Single trips completed | Mail carried pounds | Approximate Total mileage |
|---|-------------|------------------------|---------------------|---------------------------|
| Leamington-Pele Island.....                               | 22          | 224                    | 24,431              | 4,928                     |
| Quebec-Seven Islands.....                                 | 350         | 67                     | 30,055              | 22,510                    |
| Seven Islands-Anticosti Is.                               | 120         | 10                     | 3,623               | 1,200                     |
| Moncton-Magdalen Islands.....                             | 200         | 20                     | 7,444               | 2,400                     |
| Montreal-Charlottetown.....                               | 110         | 132                    | 59,125              | 13,183                    |
| Montreal-Rimouski.....                                    | 330         | 114                    | 68,672              | 35,558                    |
| Montreal-Ottawa.....                                      | 110*        | 51                     | 2,801               | 5,610                     |
| Lac du Bonnet-Bissett-Wadhope.....                        | 82          | 96                     | 18,926              | 7,774                     |
| Montreal-Toronto.....                                     | 330*        | 300                    | 7,724               | 97,578                    |
| Montreal-Detroit.....                                     | 588         | 280                    | 18,401              | 146,846                   |
| Montreal-Albany.....                                      | 200         | 291                    | 20,680              | 57,145                    |
| Sioux Lookout-Red Lake Area.....                          | 320         | 142                    | 83,406              | 22,890                    |
| Cranberry Portage-Kississing.....                         | 45          | 122                    | 36,338              | 7,250                     |
| Toronto-Buffalo.....                                      | 100         | 153                    | 27,909              | 15,273                    |
| Montreal-Saint John.....                                  | 601*        | 32                     | 1,118               | 14,746                    |
| Saint John-Halifax.....                                   | 155         | 28                     | 2,021               | 5,040                     |
| Ottawa-Montreal-Saint John.....                           | 711         | 24                     | 3,161               | 11,424                    |
| Oskelaneo-Chibougamau.....                                | 130         | 4                      | 447                 | 520                       |
| MacKenzie River Service—<br>Fort McMurray-Fort Smith..... |             | 26                     |                     |                           |
| Fort Smith-Fort Resolution.....                           | 1,676       | 16                     | 12,849              | 17,093                    |
| Fort Resolution-Fort Simpson.....                         |             | 10                     |                     |                           |
| Fort Simpson-Aklavik.....                                 |             | 6                      |                     |                           |
| Special Flights.....                                      |             | 14                     | 918                 | 1,672                     |
| Totals.....   | 5,139       | 2,162                  | 430,636             | 490,640                   |

\*Included in extended routes.

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## TRANSPORTATION IN CANADA

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The above services are operated by commercial aviation companies under contract with the Post Office Department, and are the initial steps in the establishment of a great system of airways which will in time connect all parts of the Dominion.

St. Hubert airport at Montreal is the terminal of the first international passenger freight and mail route between the United States and Canada, and the traffic returns of international business already indicate this airport being one of the most important on the continent.

During 1929 the total aircraft operating to and from St. Hubert airport was 2,426, and revenue obtained from storage, etc., amounted to \$9,999.15. In the same year 58 aircraft were imported and the value of aircraft and parts imported was \$572,289.

### LICENSED CIVIL AERODROMES

#### *Public Airports*

|                              |                                  |                                |
|------------------------------|----------------------------------|--------------------------------|
| Brandon, Man.                | Moncton, N.B.                    | Stratford, Ont.                |
| Brantford, Ont.              | Montreal, P.Q.<br>(La Salle)     | Sydney, N.S.                   |
| Calgary, Alta.               | Montreal, P.Q.                   | Toronto, Ont.<br>(De Lessepps) |
| Cap de la Madeleine,<br>P.Q. | (St. Hubert)                     | Toronto, Ont. (Leaside)        |
| Edmonton, Alta.              | Montreal, P.Q.<br>(Cartierville) | Trail, B.C.                    |
| Fernie, B.C.                 | Moose Jaw, Sask.                 | Vancouver, B.C.                |
| Fort William, Ont.           | Ottawa, Ont.                     | Vegreville, Alta.              |
| Grand Forks, B.C.            | Quebec, P.Q.                     | Walkerville, Ont.              |
| Hamilton, Ont.               | Regina, Sask.                    | Winnipeg, Man.<br>(Stevenson)  |
| Kingston, Ont.               | Rimouski, P.Q.                   | Winnipeg, Man.<br>(West Can.)  |
| Kitchener, Ont.              | Saskatoon, Sask.                 | Virden, Man.                   |
| London, Ont.                 | St. Catharines, Ont.             |                                |
| Medicine Hat, Alta.          |                                  |                                |

#### *Public Airports Licensed for Customs*

|                                |                  |                   |
|--------------------------------|------------------|-------------------|
| Lethbridge, Alta.              | Moose Jaw, Sask. | Walkerville, Ont. |
| Montreal, P.Q.<br>(St. Hubert) | Regina, Sask.    |                   |

#### *Auxiliary Aerodromes*

Digby, N.S.

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## THE CANADIAN INDUSTRIAL FIELD

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### *Private Airports and Aerodromes*

|                  |               |                 |
|------------------|---------------|-----------------|
| Belleville, Ont. | Regina, Sask. | Winnipeg, Man.  |
| Chatham, Ont.    | Toronto, Ont. | Woodstock, Ont. |
| Longueuil, P.Q.  |               | Victoria, B.C.  |

### *Private Seaplane Ports*

|                     |                |                        |
|---------------------|----------------|------------------------|
| English Bay, B.C.   | Montreal, P.Q. | Quebec, P.Q. (Sillery) |
| Sioux Lookout, Ont. |                |                        |

### *Public Seaplane Ports*

|                      |                     |                   |
|----------------------|---------------------|-------------------|
| Kingston, Ont.       | St. Félicien, P.Q.  | Swanson Bay, B.C. |
| Lake Waskesiu, Sask. | Saint John, N.B.    | Toronto, Ont.     |
| Longueuil, P.Q.      | Sioux Lookout, Ont. | Winnipeg, Man.    |
| Montreal, P.Q.       |                     |                   |

### *Public Seaplane Anchorages*

|                   |                   |                    |
|-------------------|-------------------|--------------------|
| Emma Lake, Sask.  | Haileybury, Ont.  | Three Rivers, P.Q. |
| Fredericton, N.B. | Port Arthur, Ont. |                    |

### *Public Seaplane Anchorages also Licensed for Customs*

|                   |                  |
|-------------------|------------------|
| Fredericton, N.B. | Haileybury, Ont. |
|-------------------|------------------|

### *Private Seaplane Anchorages*

|                       |                       |                        |
|-----------------------|-----------------------|------------------------|
| Como, Ont.            | Montreal, P.Q.        | Sault Ste. Marie, Ont. |
| Fort Francis, Ont.    | (Pointe aux Trembles) | Sioux Lookout, Ont.    |
| Lac à la Tortue, P.Q. | Oba Lake, Ont.        | Sudbury, Ont.          |
| Matapedia Lake, P.Q.  | Orient Bay, Ont.      | Temiscouata, P.Q.      |
| Minaki, Ont.          | Remi Lake, Ont.       | Timagami, Ont.         |
|                       | Roberval, P.Q.        |                        |

THE CANADIAN INDUSTRIAL FIELD

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CHAPTER VIII

WATER-POWER RESOURCES  
OF CANADA

Prepared by the Dominion Water Power and Hydrometric Bureau  
Department of the Interior



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Issued by  
THE NATIONAL DEVELOPMENT BUREAU  
DEPARTMENT OF THE INTERIOR  
and  
THE DEPARTMENT OF TRADE AND COMMERCE

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Preliminary Edition



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# WATER-POWER RESOURCES OF CANADA

## 1. WATER-POWER RESOURCES

Canada is so richly endowed with water-power that practically every large industrial centre of the Dominion is now served with hydro-electric energy and has within easy transmission distance, ample reserves for many years to come. Over 95 per cent of the prime motive power of the central electric stations of Canada is hydro-electric and in the provinces of Ontario and Quebec, which have no indigenous coal supplies, water-power is the mainspring of industrial progress.

The tabulation below gives a recent estimate of these resources.

AVAILABLE AND DEVELOPED WATER-POWER IN CANADA BY PROVINCES,  
JANUARY 1, 1930

| Province                             | Available 24-hour power at<br>80 per cent efficiency |                                   | Turbine<br>Installation |
|--------------------------------------|--|-----------------------------------|-------------------------|
|                                      | At Ordinary<br>Minimum<br>Flow                       | At Ordinary<br>Six Months<br>Flow |                         |
| 1                                    | 2  | 3                                 | 4                       |
|                                      | H.P.   | H.P.                              | H.P.                    |
| British Columbia.....                | 1,931,000  | 5,103,500                         | 559,792                 |
| Alberta.....                         | 390,000  | 1,049,500                         | 70,532                  |
| Saskatchewan.....                    | 542,000  | 1,082,000                         | 35                      |
| Manitoba.....                        | 3,309,000  | 5,344,500                         | 311,925                 |
| Ontario.....                         | 5,330,000  | 6,940,000                         | 1,952,055               |
| Quebec.....                          | 8,459,000  | 13,064,000                        | 2,595,430               |
| New Brunswick.....                   | 68,600   | 169,100                           | 112,631                 |
| Nova Scotia.....                     | 20,800   | 128,300                           | 109,124                 |
| Prince Edward Island.....            | 3,000  | 5,300                             | 2,439                   |
| Yukon and Northwest Territories..... | 294,000  | 731,000                           | 13,199                  |
| Canada.....                          | 20,347,400   | 33,617,200                        | 5,727,162               |

The figures in columns 2 and 3 in the above table represent 24-hour power, and are based upon rapids, falls and power sites of which the actual existent drop or the head of possible concentration is definitely known or at least well established. Innumerable rapids and falls of greater or less power capacity, which are not as yet

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## THE CANADIAN INDUSTRIAL FIELD

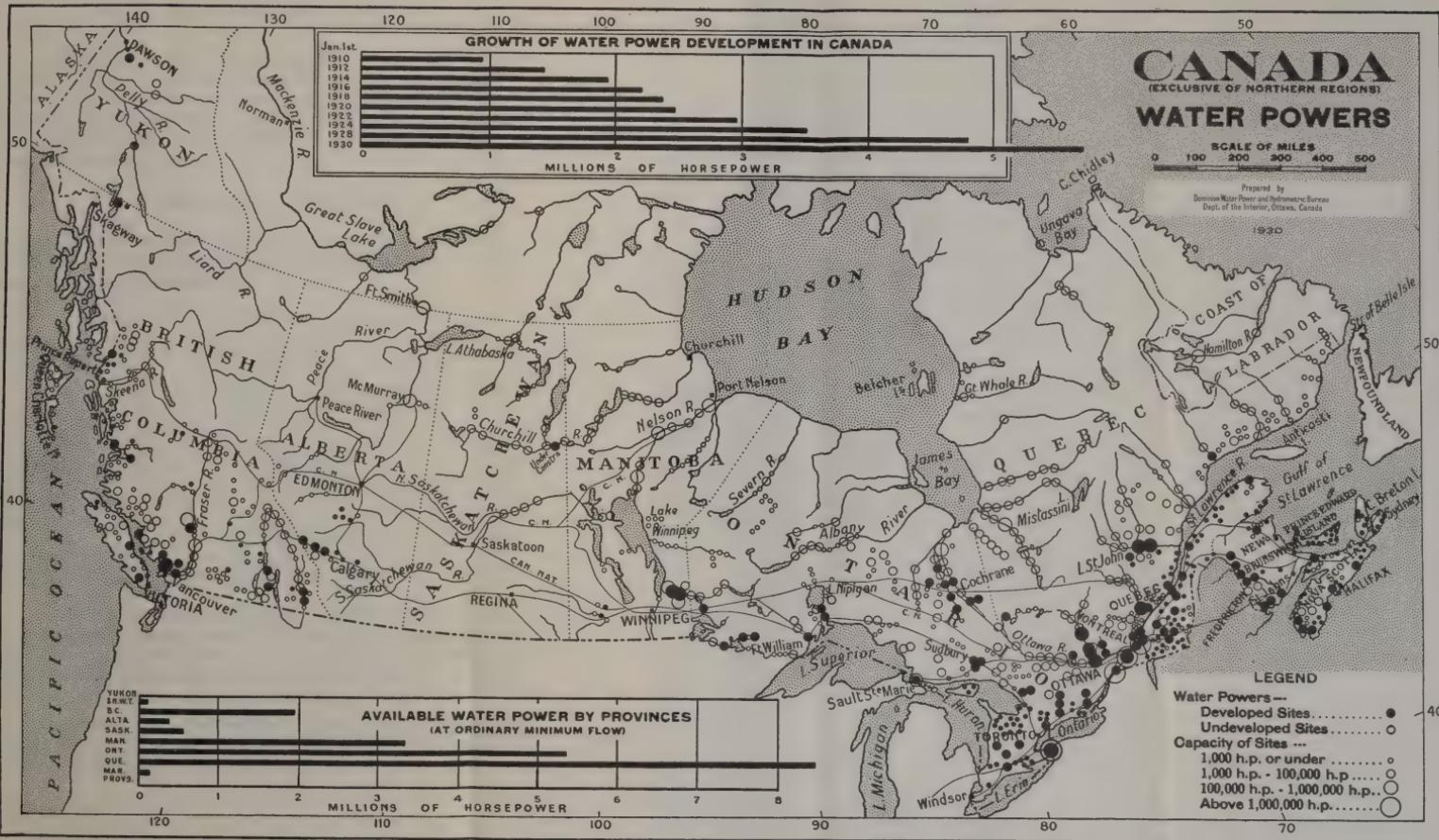
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recorded, are scattered on rivers and streams from coast to coast and will only become available for tabulation as more detailed survey work is undertaken and completed. This is particularly true of the less explored northern districts. Nor is any consideration given to the power concentrations which are feasible on rivers and streams of gradual gradient where economic heads may be created by the construction of power dams, excepting only at points where definite studies have been carried out and the results made matters of record.

The figures in column 4 represent the actual water wheels installed throughout the Dominion, but these figures should not be placed in direct comparison with the available power figures in columns 2 and 3 for the purpose of deducing therefrom the percentage of the available water-power resources developed to date. The actual water wheel installation throughout the Dominion averages 30 per cent greater than corresponding maximum available power figures calculated as in column 3. The figures quoted above, therefore, indicate that the "at present recorded water-power resources" of the Dominion will permit of a turbine installation of about 43,700,000 h.p. In other words, the present turbine installation represents only about 13 per cent of the present recorded water-power resources.

The above figures may be said to represent the minimum water-power possibilities of the Dominion. To illustrate, detailed analyses of the water-power resources of the provinces of New Brunswick and Nova Scotia have disclosed most advantageous reservoir facilities for regulating stream flow. It is estimated that the two provinces possess within their respective borders 200,000 and 300,000 commercial horse-power. These figures provide for a diversity factor between installed power and consumers' demands.

Compared with other countries, Canada stands second only to the United States in turbine horse-power installation. Canada also stands second in turbine horse-power installation per capita, Norway alone being higher. On a per capita basis Canada has nearly five times the installation of the United States.





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## WATER POWER RESOURCES IN CANADA

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Canada's hydro-electric development has increased from 170,000 h.p. in 1900 to 5,727,000 h.p. at the beginning of 1930. Between 1922 and 1930, installations of over 2,700,000 h.p. were made, and current undertakings, when completed to their designed capacity, will involve a total added installation of upwards of 3,000,000 h.p. over figures quoted above.

### 2. DEVELOPED WATER-POWER

An analysis is made in the tabulation below of the distribution of developed water-power among central electric stations, pulp and paper mills and other industries.

**POTENTIAL AND ACTUAL HYDRO-ELECTRIC POWER IN CANADA**  
(January 1, 1930—in horse-power)

| Province                              | Available<br>24 hours at<br>80 per cent<br>efficiency<br>at ordinary<br>minimum<br>flow | Turbine Installations              |                               |                            |           |
|---------------------------------------|---|------------------------------------|-------------------------------|----------------------------|-----------|
|                                       |   | In central<br>electric<br>stations | In pulp<br>and paper<br>mills | In other<br>indus-<br>ties | Total     |
| British Columbia.....                 | 1,931,000   | 417,960                            | 81,000                        | 60,832                     | 559,792   |
| Alberta.....                          | 390,000   | 70,320                             | .....                         | 212                        | 70,532    |
| Saskatchewan.....                     | 542,000   | .....                              | .....                         | 35                         | 35        |
| Manitoba.....                         | 3,309,000   | 311,925                            | .....                         | .....                      | 311,925   |
| Ontario.....                          | 5,330,000   | 1,616,773                          | 240,880                       | 94,402                     | 1,952,055 |
| Quebec.....                           | 8,459,000   | 2,238,525                          | 221,160                       | 135,745                    | 2,595,430 |
| New Brunswick.....                    | 68,600  | 83,910                             | 19,778                        | 8,943                      | 112,631   |
| Nova Scotia.....                      | 20,800  | 77,697                             | 16,008                        | 15,419                     | 109,124   |
| Prince Edward Island.....             | 3,000   | 376                                | .....                         | 2,063                      | 2,439     |
| Yukon and North West Territories..... | 294,000   | .....                              | .....                         | 13,199                     | 13,199    |
| Canada.....                           | 20,347,400  | 4,817,486                          | 578,826                       | 330,850                    | 5,727,162 |

NOTE.—The entire electrical output of central electric stations is sold. Much of it is purchased by the pulp and paper and other industries to supplement the power generated in their own plants.

The extent to which pulp and paper manufacturing is dependent on water-power is clearly shown by the figures above which indicate that over 10 per cent of the total developed power is installed by pulp and paper companies as against less than 6 per cent developed by all other industries other than central electric stations.

The central electric station is the prime source of industrial power, and the development of this industry had has a marked effect on development within the industrial zones.

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## THE CANADIAN INDUSTRIAL FIELD

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The principal companies or groups supplying hydro-electric power for industrial consumption are given below.

*Ontario—*

The Hydro-Electric Power Commission of Ontario operating the following systems—  
Niagara System.  
Georgian Bay System.  
Nipissing System.  
Central Ontario System.  
St. Lawrence System.  
Rideau System.  
Ottawa System.  
Thunder Bay System.  
Dominion Power and Transmission Co.  
Ottawa Electric Co.  
Great Lakes Power Co.  
Algoma District Power Co.  
Canada Northern Power Corp.  
International Nickel Co.  
Wahnapitae Power Co.  
Keewatin Power Co.

*Quebec—*

Montreal Light, Heat and Power Co.  
Shawinigan Water and Power Co.  
Southern Canada Power Co.  
Duke-Price Power Co.  
Gatineau Power Co.

*New Brunswick—*

New Brunswick Electric Power Commission.  
Maine and New Brunswick Electrical Power Co.  
St. John River Power Co.

*Nova Scotia—*

Nova Scotia Power Commission operating the following systems—  
St. Margaret Bay System.  
Mushamush System.  
Sheet Harbour System.  
Mersey River System.  
Tusket System.

*Manitoba—*

Manitoba Power Commission.  
Municipality of Winnipeg.  
Winnipeg Electric Co.  
Manitoba Power Co.  
Northwestern Power Co.

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## WATER POWER RESOURCES IN CANADA

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*Saskatchewan—*

Churchill River Power Co.

*Alberta—*

Calgary Power Co.

*British Columbia—*

British Columbia Power Corp.  
West Kootenay Power and Light Co.,  
East Kootenay Power Co.,

### **Hydro-electric Power in the Pulp and Paper Industry**

This industry is the largest individual consumer of industrial power. The industry has installed nearly 580,000 h.p. and purchases and additional 860,000 h.p. from central electric stations, more than 90 per cent of the energy used in the industry being hydro-electric. There are 48 pulp and paper mills in Ontario operated by hydro-electric power, 53 in Quebec, 7 in British Columbia, 1 in Manitoba, 6 in New Brunswick, and 6 in Nova Scotia.

### **Hydro-electric Power in the Mineral Industry**

The mineral industry also is a large consumer of hydro-electric energy having about 100,000 h.p. installed and purchasing about 380,000 h.p. from central electric stations.

Notable among the hydro-electric installations in the mining industry are the power developments of the Granby Consolidated Mining, Smelting and Power Co., Anyox, British Columbia, 13,200 h.p., and the Britannia Mining and Smelting Company, British Columbia, 19,070 h.p.

### **Current Development**

The rapid growth in water-power development over the past few years is being maintained and we may even look for an increase in the rate of development. The initial installations in connection with undertakings now under construction will add between 500,000 and 600,000 h.p. to existing production, and the completion of these projects to their ultimate capacity will increase Canada's total installation by over 2,500,000 h.p.

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## THE CANADIAN INDUSTRIAL FIELD

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Among the large undertakings now in progress are the Beauharnois development on the St. Lawrence River near Montreal, the Chats Falls development on the Ottawa River, the Chute-à-Caron development in the Lake St. John section of Quebec, the Slave Falls and Seven Sisters developments on the Winnipeg River, the Island Falls development on the Churchill River in Northern Saskatchewan and the Stave River and Bridge River developments in British Columbia.

### **Undeveloped Water Powers**

Present installation given above as 5,727,162 h.p. represents about 13 per cent of present recorded water-power resources, which provide for a possible installation of 43,700,000 h.p., which may be said to represent minimum water-power possibilities and which may be revised upward as study of the regulation of stream-flow is developed.

This is a large reserve of undeveloped power and while many power sites are as yet remote from industrial centres, a great deal of power located reasonably close to large centres still awaits the call of industry.

Huge reserves are available in British Columbia, such rivers as the Skeena, Nass, Bulkley, in the north, remaining undeveloped, while the potentialities of such unharnessed rivers as the Fraser, Columbia and their tributaries are reckoned in millions of horse-power; Alberta has power resources capable of yielding more than 1,000,000 h.p. as has also Saskatchewan, while in Manitoba the undeveloped power on the Nelson River alone approaches 4,000,000 h.p. In Ontario the principal undeveloped water-power lies in the international section of the St. Lawrence River, and on the inter-provincial reach of the Ottawa River, though the great streams draining north to Hudson Bay have undeveloped sites of great future economic importance. Quebec has the greatest reserve of undeveloped power of any of the provinces, and although a great deal of this is in territory remote from present industrial areas, the





## WATER POWER RESOURCES IN CANADA

St. Lawrence River itself still has more than 2,000,000 h.p. of undeveloped energy, a part of which is being taken up in current undertakings.

In the Maritime Provinces, a large number of small power sites are still available for development.

### DEVELOPED WATER-POWERS IN CANADA

Hydro-electric Stations serving Industrial Areas indicated on Plate

| No. | Plant or System                                  | Owner                                       | Installation |
|-----|--|---|--------------|
| 1   | Anyox Plant.....                                 | Granby Cons. Min., Smelt. & Power Co., Ltd. | 13,400       |
| 2   | Woodworth Lake Plant.....                        | Power Corporation of Canada.....            | 1,650        |
| 3   | Ocean Falls Plants.....                          | Pacific Mills Ltd.....                      | 26,850       |
| 4   | Millstone River Plant.....                       | Nanaimo Elec. L., P. & Heat. Co., Ltd.      | 450          |
|     | Coal Creek Plant.....                            | " " "                                       | 150          |
|     | Puntledge River Plant.....                       | Canadian Collieries Ltd.....                | 12,000       |
| 5   | Shuswap Falls Plant.....                         | West Canadian Hydro-Elec. Corp.....         | 3,800        |
| 6   | Barrière River.....                              | Municipality of Kamloops.....               | 2,000        |
| 7   | Goldstream Plant.....                            | British Columbia Power Corp., Ltd.....      | 3,400        |
|     | Jordan River Plants.....                         | " "   | 27,250       |
| 8   | Coquitlam-Buntzen Plants.....                    | " "   | 84,000       |
|     | Stave Falls Plant.....                           | " "   | 77,500       |
|     | Alouette Plant.....                              | " "   | 12,500       |
| 9   | Powell River Plant.....                          | Powell River Co., Ltd.....                  | 49,860       |
| 10  | South Slocan Plant.....                          | West Kootenay Pwr. & Light Co., Ltd.        | 75,000       |
|     | Bonnington Falls Plant.....                      | " "   | 94,000       |
|     | Bonnington Falls Plant.....                      | Municipality of Nelson.....                 | 6,570        |
| 11  | Bull River Plant.....                            | East Kootenay Power Co., Ltd.....           | 7,200        |
|     | Elk River Plant.....                             | " "   | 15,000       |
| 12  | Kananaskis Falls Plant.....                      | Clagary Power Co.....                       | 11,600       |
|     | Horseshoe Falls Plant.....                       | " "   | 20,000       |
|     | Ghost Falls Plant.....                           | " "   | 36,000       |
|     | Eau Claire Plant.....                            | " "   | 780          |
| 13  | Pointe du Bois Plant.....                        | Municipality of Winnipeg.....               | 105,000      |
|     | Pinawa Plant.....                                | Winnipeg Electric Co., Ltd.....             | 37,800       |
|     | Great Falls Plant.....                           | " "   | 168,000      |
| 14  | Kenora Plants.....                               | Keewatin Power Co., Ltd.....                | 30,875       |
| 15  | Ear Falls Plant.....                             | Hydro-Elec. Power Comm. of Ont.             | 5,000        |
| 16  | Fort Frances, Moose, Mill and Calm Lakes Plants. | Ontario and Minn. Power Co., Ltd....        | 51,850       |
| 17  | Kakabeka Falls Plant.....                        | Kaministiquia Power Co., Ltd.....           | 35,000       |
| 18  | Nipigon Plant.....                               | Hydro-Elec. Power Comm. of Ont....          | 75,000       |
| 19  | Sault Ste. Marie Plant.....                      | The Great Lakes Power Co., Ltd....          | 28,050       |
|     | High Falls Plant.....                            | Algoma District Power Corp., Ltd....        | 18,770       |
| 20  | Smoky Falls Plant.....                           | Spruce Falls Power and Paper Co., Ltd.      | 56,250       |
| 21  | Wawayatin Falls Plant.....                       | Canada Northern Power Corp., Ltd.           | 14,900       |
|     | Sandy Falls Plant.....                           | " "   | 4,900        |
|     | Sturgeon Falls Plant.....                        | " "   | 8,000        |
|     | Indian Chutes Plant.....                         | " "   | 4,000        |
| 22  | Iroquois, Twin and Island Falls Plants.          | Abitibi Power and Paper Co., Ltd....        | 106,000      |

THE CANADIAN INDUSTRIAL FIELD

DEVELOPED WATER-POWERS IN CANADA—Continued

| No. | Plant or System                      | Owner                                    | Installation |
|-----|--------------------------------------|--|--------------|
| 23  | Hound Chute Plant.....               | Canada Northern Power Corp., Ltd...      | 5,340        |
|     | Fountain Falls Plant.....            | " "                                      | 3,000        |
|     | Matabitcheuan Plant.....             | " "                                      | 13,200       |
|     | Ka-Ka-Ke Falls Plant.....            | " "                                      | 40,000       |
| 24  | Secord Plant.....                    | Hydro-Elec. Power Comm. of Ont...        | 3,600        |
|     | Dryden Plant.....                    | " "                                      | 6,300        |
|     | Long Sault Plant.....                | " "                                      | 7,000        |
|     | Espanola Plant.....                  | Abitibi Power and Paper Co., Ltd...      | 20,800       |
| 25  | High Falls and Big Eddy Plants.....  | International Nickel Co. of Canada, Ltd. | 50,400       |
| 26  | South River Plants.....              | Hydro-Elec. Power Comm. of Ont...        | 5,700        |
| 27  | Sturgeon and Smoky Falls Plants..... | Abitibi Power and Paper Co., Ltd...      | 23,790       |
| 28  | Swift Rapids Plant.....              | Municipality of Orillia.....             | 6,360        |
|     | Big Chute Plant.....                 | Hydro-Elec. Power Comm. of Ont...        | 6,200        |
|     | Wasdells Falls Plant.....            | " "                                      | 1,200        |
|     | South Falls Plant.....               | " "                                      | 5,400        |
|     | Trethewey Falls Plant.....           | " "                                      | 2,200        |
|     | Hanna Chute Plant.....               | " "                                      | 1,550        |
| 29  | Eugenia Falls Plant.....             | " "                                      | 8,500        |
| 30  | Central Ontario System Plants.....   | " "                                      | 57,980       |
|     | Peterborough Plant.....              | Peterborough Hydraulic Pwr. Co., Ltd.    | 6,000        |
|     | Campbellford Plant.....              | Municipality of Campbellford.....        | 3,370        |
| 31  | Niagara Falls Plant.....             | Canadian Niagara Power Co., Ltd...       | 121,000      |
|     | De Cew Falls Plant.....              | Dominion Power and Trans. Co., Ltd.      | 45,000       |
|     | Niagara Falls Plants.....            | Hydro-Elec. Power Comm. of Ont...        | 874,700      |
| 32  | Waltham Plant.....                   | Pembroke Elec. Light Co., Ltd...         | 3,600        |
|     | Bryson Plant.....                    | Gatineau Power Co.                       | 51,400       |
| 33  | Bonnechère River Plants.....         | Municipality of Renfrew.....             | 1,700        |
|     | Calabogie Plant.....                 | Hydro-Elec. Power Comm. of Ont...        | 6,000        |
|     | Galetta Plant.....                   | " "                                      | 1,400        |
| 34  | High Falls and Carleton Place Plants | " "                                      | 4,450        |
| 35  | Paugan Plant.....                    | Gatineau Power Co.                       | 204,000      |
|     | Chelsea Plant.....                   | "  | 136,000      |
|     | Farmers Plant.....                   | "  | 96,000       |
| 36  | Chaudière Plants.....                | "  | 36,600       |
|     | "                                    | Ottawa Electric Company.....             | 13,100       |
| 37  | Cedars Rapids Plant.....             | Montreal Light, Heat & Power Cons.       | 197,400      |
|     | Soulange Plant.....                  | " "                                      | 16,050       |
|     | St. Timothée Plant.....              | Canadian Light and Power Co...           | 30,400       |
| 38  | Chambly Plant.....                   | Montreal Light, Heat & Power Cons.       | 21,600       |
|     | Lachine Plant.....                   | " "                                      | 15,800       |
| 39  | Des Prairies River Plant.....        | Montreal Island Power Co.....            | 52,800       |
| 40  | St. François and Magog River Plants  | Municipality of Sherbrooke.....          | 17,050       |
|     | Sherbrooke Plant.....                | Southern Canada Power Co., Ltd.          | 4,050        |
| 41  | Drummondville Plant.....             | " "                                      | 19,500       |
|     | Hemmings Falls Plant.....            | " "                                      | 33,600       |
| 42  | Shawinigan Falls Plants.....         | Shawinigan Water and Power Co.           | 237,000      |
|     | Grand-Mère Plant.....                | " "                                      | 176,000      |
|     | La Gabelle Plant.....                | " "                                      | 120,000      |
|     | St. Narcisse Plant.....              | North Shore Power Co.....                | 22,400       |
|     | St. Albain Plant.....                | Portneuf Power Co.....                   | 4,000        |
| 43  | St. Gabriel Plant.....               | Quebec Power Co., Ltd.                   | 3,000        |
|     | Montmorency River Plants.....        | "  | 7,000        |
| 44  | Chaudière River Plant.....           | "  | 4,800        |
|     | St. Férol Plant.....                 | "  | 24,000       |
| 45  | St. Raphaël and Armagh Plants.....   | "  | 4,900        |

## WATER POWER RESOURCES IN CANADA

### DEVELOPED WATER-POWERS IN CANADA—Continued

| No.   | Plant or System   | Owner   | Installation |
|---|---|---|--------------|
| 46  | Métis River Plant.....                                    | Lower St. Lawrence Power Co., Ltd.                        | 3,700        |
| 47  | Île Maligne Plant.....                                    | Duke-Price Power Co.....                                  | 495,000      |
|   | Rivière à Mars Plant.....                                 | Municipality of Bagotville.....                           | 1,350        |
|   | Garneau Falls Plant.....                                  | Saguenay Electric Co.....                                 | 3,500        |
|   | Chicoutimi River Plant.....                               | La Société d'Éclairage et d'Énergie<br>Elec. de Saguenay. | 7,200        |
|   | Shipshaw, Chicoutimi River and Au-<br>Sable River Plants. | Price Bros. & Co., Ltd.....                               | 70,100       |
|   | Ha Ha River Plants.....                                   | Port Alfred Pulp and Paper Corp.....                      | 2,100        |
| 48  | Grand Falls Plant.....                                    | Bathurst Co., Ltd.....                                    | 14,000       |
| 49  | Aroostook Falls Plant.....                                | Maine and New Brunswick Electric<br>Power Co., Ltd.       | 11,400       |
|   | Grand Falls Plant.....                                    | St. John River Power Co.....                              | 60,000       |
| 50  | Musquash Plant.....                                       | New Brunswick Electric Pwr. Comm.                         | 11,100       |
| 51  | St. Margarets Bay Plants.....                             | Nova Scotia Power Commission.....                         | 15,820       |
| 52  | East River Sheet Harbour Plants.....                      | " " .....   | 11,840       |
| 53  | Mersey River Plants.....                                  | " " .....   | 31,050       |
| 54  | Tusket River Plant.....                                   | " " .....   | 3,000        |
| Total for Stations listed.....                |   |   | 4,955,705    |
| Total Water Power Installation in Canada..... |   |   | 5,727,162    |

### 3. CONTROL OF HYDRO-ELECTRIC POWER

On account of the importance of water-power development as a factor in the national welfare, the administration of those water-powers which form part of the public domain has received careful attention on the part of the legislative bodies throughout Canada. In general it may be said that the right to develop a water-power of commercial value can be acquired only in the form of a lease or licence for a definite term of years, subject in some cases to renewal, with or without compensation when the term expires. There are some exceptions to this rule; in Prince Edward Island where the power sites are of small extent and all in private ownership, they may be acquired outright by purchase of the riparian land, and in New Brunswick, Quebec and Ontario also small sites may similarly be acquired by purchase; but in Quebec it is in all cases desirable if not essential, to obtain a confirmatory grant from the provincial Government and in Ontario all works in water require the approval of the Government authorities while in New Brunswick dams require a corresponding approval.

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## THE CANADIAN INDUSTRIAL FIELD

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The term of a water-power licence varies according to the conditions attaching to the particular site and the practice of the province in which it is situated. In Nova Scotia it is from 10 to 50 years and the original grantee is given the preference in any renewal which is permitted. In Quebec, from 20 to 99 years, 75 being the most usual term. Generally there is no right of renewal and no provision for compensation at the end of the term. In Ontario, 20 years with a right to two further terms of 10 years each, compensation being determined by the Government and approved by the Legislative Assembly. In Manitoba, Saskatchewan and Alberta 50 years is the maximum term, subject to renewal under the regulations in force at that time. The development may be taken over by the Crown at any time after 30 years of the licence term has expired; and in all cases when the licence expires or is terminated, compensation suitable to the conditions is provided. In British Columbia the maximum term is also 50 years at present without provision for renewal or compensation.

There are some further requirements controlling hydro-electric development. All proposed works in navigable waters which may effect navigation require the prior approval of the federal Government. As lumbering is carried on along many of the larger rivers, power development must be conducted without undue interference with floating rights, and in general it may be said that the construction, operation and maintenance of all such projects is in Canada subject to governmental approval and supervision. In each province there is a Public Utility Commission for the regulation of rates and services and with general control of the operations of hydro-electric undertakings in the public utility field.

Applications for water-power rights or for information as to conditions of acquiring and using such rights should be addressed to the following administrative officers of the Dominion and provincial Governments:—

The Yukon and Northwest Territories: The Director of Water Power, Ottawa,  
Ont.

Province of British Columbia: The Comptroller of Water Rights, Department  
of Lands, Victoria, B.C.

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## WATER POWER RESOURCES IN CANADA

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Province of Alberta: The Acting Deputy Minister, Department of Railways and Telephones, Edmonton, Alberta.

Province of Saskatchewan: The Deputy Minister, Department of Natural Resources, Regina, Sask.

Province of Manitoba: The Deputy Minister, Department of Mines and Natural Resources, Winnipeg, Man.

Province of Ontario: The Deputy Minister of Lands and Forests, Toronto, Ont.

Province of Quebec: The Chief Engineer, Hydraulic Service, Department of Lands and Forests, Quebec, Que.

Province of New Brunswick: The Chairman of the New Brunswick Electric Power Commission, Saint John, N.B.

Province of Nova Scotia: The Chairman of the Nova Scotia Power Commission, Halifax, N.S.

Province of Prince Edward Island: The Provincial Secretary-Treasurer, Charlottetown, P.E.I.

For general information regarding the water-powers of the Dominion, application should be made to the Director of Water Power, Department of the Interior, Ottawa.



THE CANADIAN INDUSTRIAL FIELD

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CHAPTER IX

FUEL RESOURCES OF CANADA

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Issued by  
THE NATIONAL DEVELOPMENT BUREAU  
DEPARTMENT OF THE INTERIOR  
and  
THE DEPARTMENT OF TRADE AND COMMERCE

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Preliminary Edition



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## FUEL RESOURCES OF CANADA

The important fuel resources of Canada may be summarized as follows:—

Coal and Coke.

Natural Gas.

Crude Oil.

### 1. COAL AND COKE

#### Coal

The main coal fields may be grouped into three general sections:—

The Maritime Provinces Section (Nova Scotia and New Brunswick).

Western Interior Section (Ontario, Manitoba, Saskatchewan and Alberta).

British Columbia Section.

In addition large coal fields exist in the Northwest Territories, Yukon, and the Arctic Islands, which have not been delimited, and the reserves of which are not known or can be estimated only approximately. The Ontario Government is working on the development of a lignite field, the economic importance of which may prove to be considerable.

#### COAL RESOURCES OF CANADA BY PROVINCES

(In Metric Tons of 2,204 lbs.)

| Canada                             | Actual reserve                                    |                      | Probable reserve     |                      | Total<br>Thousands<br>of tons |  |
|------------------------------------|---|----------------------|----------------------|----------------------|-------------------------------|--|
|                                    | Calculations based on actual thickness and extent |                      | Approximate estimate |                      |                               |  |
|                                    | Area<br>square miles                              | Thousands of<br>tons | Area<br>square miles | Thousands of<br>tons |                               |  |
| <b>MARITIME PROVINCES SECTION—</b> |   |                      |                      |                      |                               |  |
| Nova Scotia.....                   | 174.31  | 2,188,151            | 346.5                | 7,530,817            | 9,718,968                     |  |
| New Brunswick.....                 |   |                      | 121.0                | 151,000              | 151,000                       |  |
| <b>WESTERN INTERIOR SECTION—</b>   |   |                      |                      |                      |                               |  |
| Ontario.....                       |   |                      | 10.0                 | 25,000               | 160,000                       |  |
| Manitoba.....                      |   |                      | 48.0                 | 160,000              | 160,000                       |  |
| Saskatchewan.....                  | 306.0   | 2,412,000            | 13,100.0             | 57,400,000           | 59,812,000                    |  |
| Alberta.....                       | 25,300.0  | 386,392,300          | 56,578.0             | 686,254,600          | 1,072,647,400                 |  |
| <b>BRITISH COLUMBIA SECTION—</b>   |   |                      |                      |                      |                               |  |
| British Columbia.....              | 439.0   | 23,831,242           | 5,606.0              | 52,203,700           | 76,034,942                    |  |
| Yukon.....                         |   |                      | 2,840.0              | 4,940,000            | 4,940,000                     |  |
| Northwest Territories.....         |   |                      | 300.0                | 4,800,000            | 4,800,000                     |  |
| Arctic Islands.....                |   |                      | 6,000.0              | 6,000,000            | 6,000,000                     |  |
| Total.....                         | 26,219.31   | 414,804,193          | 84,949.5             | 819,465,117          | 1,234,269,310                 |  |

From The Coal Resources of the World, published by the Twelfth International Geological Congress, 1913.

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## THE CANADIAN INDUSTRIAL FIELD

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### Maritime Provinces Section

#### NOVA SCOTIA

The production of coal in 1929 was 7,056,133 tons. Of this the Sydney field contributed 5,380,652 tons, the Cumberland field 795,714 tons, the Pictou field 722,297 tons, and the Inverness field 157,470 tons.

The coals of Nova Scotia are bituminous (high volatile), with high calorific value, low moisture and ash content. They possess coking properties and are suitable for all general purposes, viz., steam raising, metallurgical by-product coking and gas. Sydney coals are slightly lower in ash content than the Pictou coals, but they have a higher sulphur content. The Cumberland coal is low in sulphur and is cleaner than the Sydney coals.

#### NEW BRUNSWICK

The production of coal in 1929 was 218,706 tons compared with 207,738 tons in 1928.

The domestic output has been for years derived almost entirely from the Minto area, located near the head of Grand Lake.

Minto coal is an average bituminous coal, low in moisture, fairly high in calorific value, and possessing good coking properties. From the point of view of handling, friability, and the extent of fines, it is inferior to the better grades of coal of Nova Scotia. The screened lump coal, however, makes a good steam coal.

### Western Interior Section

#### ONTARIO

Lignite has been long known to occur in the Moose River basin but it was not until drilling was commenced at Blacksmith Rapids on the Abitibi River in June, 1929, that a seam of economic thickness and extent was found. Since then approximately  $3\frac{1}{2}$  square miles in this locality have been proved to be underlain by a lignite seam, which averages between 20 and 25 feet in thickness, giving an approximate content of 100,000,000 tons. According to analyses, especially on the air dried and dry basis, it is very similar to that of

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## FUEL RESOURCES IN CANADA

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the Estevan field of southern Saskatchewan, although it differs materially in appearance. Owing to its high moisture content, however, it will not be practicable to ship it any great distance in the raw state.

### MANITOBA

The coal occurrences are limited to Turtle Mountain in the southwestern part of the province. The coal is a high moisture lignite and there is no present production.

### SASKATCHEWAN

The output from Saskatchewan coal mines in 1929 was 580,189 tons, being not only a 23 per cent increase over the previous year, but a new high record for the province.

Although lignite occurs in the Cypress Hills, Willowbunch-Wood Mountain and the western part of the province, over 95 per cent of the production comes from the Estevan area in the southeast corner of the province.

These low grade lignites are used locally for industrial and domestic purposes in Saskatchewan and find a considerable market in Manitoba. When they are used for industrial purposes specially designed burning equipment is usually employed. A recent development was the commencement of open-pit mining on a large scale by a company operating in the Estevan area.

Carbonized lignite briquettes have been manufactured since 1929 by a plant operating near Bienfait. The briquettes are marketed locally and in Manitoba.

### ALBERTA

This province contains 87 per cent of the coal resources of Canada and 14 per cent of the coal resources of the world. In 1929, the production amounted to 7,150,693 tons.

The Alberta coals occur in three horizons of the Cretaceous rocks: the Kootenay, the Belly River and the Edmonton.

Coal fields in the Kootenay formation are found in the foothills on the eastern slope of the Rocky Mountains, and extend from near

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## THE CANADIAN INDUSTRIAL FIELD

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the international boundary northward to beyond Smoky River. The principal districts carrying on coal mining are Crowsnest, Cascade, Nordegg, and Mountain Park.

The coal deposits of the Belly River series are found in the foothills of western Alberta and in south-central Alberta. The most productive areas are Lethbridge in the south, and Saunders Creek and Coalspur west of Edmonton.

The coal fields of the Edmonton series are found in east-central Alberta. The areas of greatest production are Drumheller, Edmonton, Pembina, Tofield, and Carbon.

The coals of the Kootenay series range in rank from bituminous to anthracite; those of the Belly River series are largely sub-bituminous; and those of the Edmonton series rank as sub-bituminous and lignite.

The production of coal by ranks in 1929 was as follows: bituminous—3,094,147 tons, sub-bituminous—668,702 tons, and lignite—3,387,844 tons.

### British Columbia Section

#### BRITISH COLUMBIA

The coal output of British Columbia in 1929 amounted to 2,490,378 tons. Of this tonnage Vancouver Island mines contributed 1,254,772 tons, Crowsnest district 962,552 tons, and the inland district 273,054 tons.

The chief coal-mining centres are Nanaimo and Comox, on Vancouver Island; Crowsnest Pass district, in the southeast corner of the province; Nicola-Princeton, in the southern interior. There are numerous undeveloped coal areas throughout the province, the most important being the Peace River field located just west of the Alberta boundary, the Groundhog area on the Skeena River, north of Hazelton, the Telkwa Valley (partially developed) in the northern part of the province, and those of Queen Charlotte Islands.

The coal mined in British Columbia ranks as bituminous, sub-bituminous and lignite. Anthracite occurs in small amounts on Graham Island, and possibly locally in the Groundhog area. The bituminous coals are suitable for household purposes, steam plants, and the manufacture of coke.

### Industrial Coal Situation in Canada

From the above very general discussion of Canadian coal resources it will be apparent that Canada has an abundance of coal for industrial purposes, sufficient for many centuries of intense industrial effort. The coal areas, however, are located in the eastern and western sections of the Dominion, whereas the most populous and highly industrialized sections—the Great Lakes-St. Lawrence zone—is barren of high grade coal.

The manufacturing areas of Quebec are supplied with coal principally from the Maritime Provinces and the United States, supplemented by a small tonnage from Great Britain.

Most of the importations of industrial coal for such large consuming centres as Toronto and Hamilton are brought from the United States coal fields by rail, although considerable quantities are imported via American lake ports for water shipment to these Canadian ports.

Nova Scotia coal for ordinary steam-raising purposes can compete at Montreal and the lower St. Lawrence section with American coal, but for the manufacture of coke, selected coals from the United States are heavy competitors.

There is a large potential market for Alberta and Saskatchewan industrial coal in Manitoba—the Winnipeg steam market alone is estimated at some 400,000 tons annually. Due, however, to lower mining costs and cheap transportation via the Great Lakes, Pennsylvania and West Virginia coals still have the advantage in price competition. In the Winnipeg area cheap hydro-electric energy is a heavy competitor for power purposes.

Saskatchewan can be divided into three coal marketing zones. In the southern portion of the province is a zone in the vicinity of the lignite mines, where lignite is practically the only coal used. In the western and northern portions of the province, Alberta coals hold the market. In the eastern area Saskatchewan and Alberta coals are sold.

At present approximately 45 per cent of the total tonnage of coal mined in British Columbia is consumed by the railroads. In

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## THE CANADIAN INDUSTRIAL FIELD

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the export business British Columbia enjoys a larger trade than the other coal producing provinces. In 1929, 14 per cent of the total production was exported.

Unfortunately the use of coal in the province has not kept pace with the expansion of general industries. This is due to a large extent to the use of fuel-oil and the steadily increasing amount of power produced from hydro-electric development.

### Coke

The production of oven coke (gas-house coke excluded) in 1929 amounted to 2,410,790 tons, representing an increase of over 100 per cent in the last five years. Coke oven plants are located at Sydney and Halifax, Nova Scotia, at Montreal, and Quebec city, Quebec, at Hamilton and Sault Ste. Marie in Ontario, at Winnipeg in Manitoba, and at Fernie and Anyox in British Columbia.

### Tariff

Under the existing tariff the import duties on coal are:—

*Bituminous*—British preferential, 35 cents per ton, intermediate, 45 cents per ton, and general, 50 cents per ton.

*Coke and Anthracite*—Free.

Ninety-nine per cent drawback on bituminous coal entering Canada for use in by-product recovery coke ovens.

Ninety-nine per cent drawback on bituminous coal entering Canada for the production of coke for use in the smelting of metals from ores and in the melting of metals.

Ninety-nine per cent drawback when pulverized by proprietors of rolling mills for heating iron or steel for use only in the production of rolled iron or steel at their rolling mills.

These drawbacks are subject to exceptions in certain instances and more specific information can be secured from the Department of National Revenue, Ottawa.

## FUEL RESOURCES OF CANADA

### 2. COAL FREIGHT RATES

IN FORCE OCTOBER, 1928

COMPILED WITH THE CO-OPERATION OF CANADIAN NATIONAL AND CANADIAN PACIFIC  
RAILWAYS

#### U.S.A. COAL FIELDS (BITUMINOUS)

##### PITTSBURGH TO

|                 | Miles |        | Miles                 |     |        |
|-----------------|-------|--------|-----------------------|-----|--------|
| Belleville..... | 390   | \$3.74 | Massena.....          | 295 | \$3.07 |
| Buffalo.....    | 174   | 2.24   | Montreal.....         | 477 | 4.38   |
| Cobourg.....    | 350   | 3.74   | Ottawa.....           | 500 | 4.28   |
| Guelph.....     | 315   | 3.64   | Owen Sound.....       | 398 | 3.94   |
| Hamilton.....   | 230   | 3.14   | Prescott.....         | 300 | 3.51   |
| Hawkesbury..... | 490   | 4.45   | Quebec.....           | 370 | 5.35   |
| Huntington..... | 380   | 4.38   | Rouge Point.....      | 425 | 4.23   |
| Kingston.....   | 405   | 4.04   | Shawinigan Falls..... | 530 | 4.79   |
| London.....     | 390   | 3.64   | Toronto.....          | 274 | 3.24   |

##### GREENSBURG TO

|                 | Miles |        | Miles            |     |        |
|-----------------|-------|--------|------------------|-----|--------|
| Belleville..... | 499   | \$3.74 | Massena.....     | 897 | \$3.34 |
| Buffalo.....    | 270   | 2.24   | Montreal.....    | 720 | 4.10   |
| Cobourg.....    | 450   | 3.74   | Ottawa.....      | 633 | 4.01   |
| Detroit.....    | 318   | 2.60   | Owen Sound.....  | 508 | 3.94   |
| Guelph.....     | 440   | 3.64   | Prescott.....    | 551 | 3.24   |
| Hamilton.....   | 349   | 3.14   | Quebec.....      | 881 | 5.08   |
| Hawkesbury..... | 693   | 4.20   | Rouge Point..... | 688 | 3.98   |
| Huntington..... | 504   | 4.10   | Shawinigan.....  | 814 | 4.52   |
| Kingston.....   | 549   | 4.04   | Toronto.....     | 386 | 3.24   |
| London.....     | 425   | 3.64   | Windsor.....     | 320 | 3.30   |

#### PENNSYLVANIA AND OHIO COAL TO BUFFALO, DETROIT, AND CANADIAN POINTS

##### CONNELLSVILLE, PA., TO

##### BELLAIRE, OHIO, TO

|               | Miles |        | Miles         |     |        |
|---------------|-------|--------|---------------|-----|--------|
| Buffalo.....  | 325   | \$2.39 | Buffalo.....  | 340 | \$2.24 |
| Detroit.....  | 373   | 2.60   | Detroit.....  | 329 | 2.14   |
| Quebec.....   | 936   | 5.21   | Quebec.....   | 951 | 6.94   |
| Montreal..... | 745   | 4.23   | Montreal..... | 770 | 4.94   |
| Toronto.....  | 431   | 3.39   | Toronto.....  | 446 | 3.24   |
| Hamilton..... | 393   | 3.29   | Hamilton..... | 408 | 3.14   |
| Windsor.....  | 327   | 3.30   | Windsor.....  | 342 | 2.80   |

##### CLEARFIELD, PA., TO

|                 | Miles |        | Miles            |     |        |
|-----------------|-------|--------|------------------|-----|--------|
| Montreal.....   | 561   | \$4.01 | Hamilton.....    | 253 | \$2.99 |
| Cochrane.....   | 759   | 6.57   | Toronto.....     | 291 | 3.09   |
| Cornwall.....   | 492   | 3.92   | Timmins.....     | 763 | 6.57   |
| Hawkesbury..... | 531   | 4.10   | Renfrew.....     | 526 | 4.54   |
| Kingston.....   | 388   | 4.27   | Sherbrooke.....  | 612 | 4.55   |
| North Bay.....  | 507   | 4.87   | Valleyfield..... | 415 | 4.01   |
| Ottawa.....     | 473   | 3.92   |                  |     |        |

#### WEST VIRGINIA COAL FIELDS TO U.S. AND CANADIAN POINTS

##### WHEELING TO

##### BLUEFIELD TO

##### CHARLESTON TO

|               | Miles |        | Miles         |       | Miles  |               |       |        |
|---------------|-------|--------|---------------|-------|--------|---------------|-------|--------|
| Buffalo.....  | 336   | \$2.24 | Buffalo.....  | 738   | \$3.48 | Buffalo.....  | 621   | \$3.28 |
| Detroit.....  | 361   | 2.60   | Detroit.....  | 506   | 2.85   | Detroit.....  | 389   | 2.60   |
| Hamilton..... | 404   | 3.14   | Hamilton..... | 703   | 4.25   | Quebec.....   | 1,177 | 6.60   |
| Quebec.....   | 947   | 6.04   | Quebec.....   | 1,244 | 6.85   | Montreal..... | 957   | 5.50   |
| Montreal..... | 776   | 4.94   | Montreal..... | 1,074 | 5.75   | Toronto.....  | 623   | 4.00   |
| Toronto.....  | 442   | 3.24   | Toronto.....  | 740   | 4.25   | Hamilton..... | 585   | 4.00   |
| Windsor.....  | 363   | 3.30   | Windsor.....  | 508   | 3.55   | Windsor.....  | 391   | 3.30   |
|               |       |        | Ottawa.....   | 970   | 5.75   |               |       |        |

## THE CANADIAN INDUSTRIAL FIELD

### WEST VIRGINIA, KENTUCKY AND PENNSYLVANIA COAL FOR SHIPMENT UP THE GREAT LAKES

|  |  |         |
|--|--|---------|
| New River, Pocahontas, etc., to Toledo and Sandusky..... |  | \$ 2.06 |
| Kanawha, Logan and Kentucky to Toledo and Sandusky.....  |  | 1.81    |
| Pittsburgh to Toledo and Sandusky.....                   |  | 1.46    |

### WEST VIRGINIA COAL FIELDS AND KENTUCKY COAL FIELDS TO HAMPTON ROADS

|  |  |      |
|--|--|------|
| New River, Pocahontas, etc., to Hampton Roads (Tidewater)..... |  | 2.25 |
| Kanawha and Logan, etc., to Hampton Roads.....                 |  | 2.34 |
| Kentucky Division to Hampton Roads.....                        |  | 2.43 |

### CURRENT OCEAN RATES BY CHARTERED VESSELS

|   |       |         |
|---|-------|---------|
| Hampton Roads to New York.....              |       | \$ 0.75 |
| Hampton Roads to New England.....           |       | 0.85    |
| Hampton Roads to Montreal, 1,619 miles..... | 0.90— | 1.10    |
| Swansea to St. Lawrence ports.....          | 1.50— | 2.50    |

### MARITIME PROVINCES COAL FIELDS TO ONTARIO AND QUEBEC

|                        | Miles |         | Miles                    |     |         |
|------------------------|-------|---------|--------------------------|-----|---------|
| Maccaan to Quebec..... | 547   | \$ 2.30 | Maccaan to Montreal..... | 670 | \$ 3.10 |
| Springhill ".....      | 538   | 2.30    | Springhill ".....        | 661 | 3.10    |
| Westville ".....       | 627   | 2.60    | Westville ".....         | 769 | 3.30    |
| Thorburn ".....        | 635   | 2.60    | Thorburn ".....          | 777 | 3.30    |
| Point Tupper ".....    | 721   | 3.20    | Point Tupper ".....      | 862 | 3.80    |
| Sydney ".....          | 823   | 3.20    | Sydney ".....            | 964 | 3.80    |
| Minto ".....           | 406   | 3.50    | Minto ".....             | 492 | 2.60    |

|                        | Miles |         | Miles                   |       |         |
|------------------------|-------|---------|-------------------------|-------|---------|
| Maccaan to Ottawa..... | 786   | \$ 4.40 | Maccaan to Toronto..... | 1,004 | \$ 6.00 |
| Springhill ".....      | 775   | 4.40    | Springhill ".....       | 995   | 6.00    |
| Westville ".....       | 885   | 4.60    | Westville ".....        | 1,102 | 6.20    |
| Thorburn ".....        | 893   | 4.60    | Thorburn ".....         | 1,111 | 6.20    |
| Point Tupper ".....    | 978   | 5.10    | Point Tupper ".....     | 1,196 | 6.70    |
| Sydney ".....          | 1,080 | 5.10    | Sydney ".....           | 1,298 | 6.70    |
| Minto ".....           | 603   | 3.10    | Minto ".....            | 832   | 4.60    |

|                          | Miles |  | Miles |         |
|--------------------------|-------|--|-------|---------|
| Maccaan to Hamilton..... |       |  | 1,043 | \$ 6.10 |
| Springhill "             |       |  | 1,034 | 6.10    |
| Westville "              |       |  | 1,142 | 6.30    |
| Thorburn "               |       |  | 1,150 | 6.30    |
| Point Tupper "           |       |  | 1,235 | 6.80    |
| Sydney "                 |       |  | 1,337 | 6.80    |
| Minto "                  |       |  | 872   | 4.80    |

### ALBERTA COAL FIELDS TO POINTS IN ONTARIO

|                          | Miles |          | Miles                     |       |          |
|--------------------------|-------|----------|---------------------------|-------|----------|
| Brazeau to Cochrane..... | 1,749 | \$ 10.60 | Brazeau to North Bay..... | 1,987 | \$ 11.70 |
| Heatburg ".....          | 1,602 | 10.00    | Heatburg ".....           | 1,841 | 11.10    |
| Coalspur ".....          | 1,731 | 10.30    | Coalspur ".....           | 1,980 | 11.40    |

|                         | Miles |          | Miles                      |       |          |
|-------------------------|-------|----------|----------------------------|-------|----------|
| Brazeau to Toronto..... | 2,281 | \$ 13.50 | Evansburg to Cochrane..... | 1,634 | \$ 10.10 |
| Heatburg ".....         | 2,135 | 12.90    | Tofield ".....             | 1,529 | 9.60     |
| Coalspur ".....         | 2,264 | 13.20    | Beynon ".....              | 1,574 | 9.80     |

|                             | Miles |  | Miles |          |
|-----------------------------|-------|--|-------|----------|
| Evansburg to North Bay..... |       |  | 1,873 | \$ 11.20 |
| Tofield "                   |       |  | 1,763 | 10.70    |
| Beynon..."                  |       |  | 1,813 | 10.90    |

**EVANSBURG TO TORONTO, 2,167 MILES, \$13.00.** **TOFIELD TO TORONTO, 2,061 MILES, \$12.50**  
**BEYNON TO TORONTO, 2,107 MILES, \$12.70.**

|                                | Miles |                     | Miles                        |       |         |
|--------------------------------|-------|---------------------|------------------------------|-------|---------|
| Blairmore to White River.....  | 1,511 | \$ 9.20 +\$1.50 car | Lethbridge to White River .. | 1,427 | \$ 8.90 |
| Blairmore to Sudbury.....      | 1,813 | 10.50               | Lethbridge to Sudbury.....   | 1,730 | 10.20   |
| Blairmore to Toronto.....      | 2,073 | 12.70               | Lethbridge to Toronto.....   | 1,989 | 12.40   |
| Drumheller to White River..... | 1,545 | 9.20                | Drumheller to Sudbury.....   | 1,847 | 10.50   |

|                                  | Miles |         | Miles                       |       |         |
|----------------------------------|-------|---------|-----------------------------|-------|---------|
| Medicine Hat to White River..... | 1,326 | \$ 8.60 | Canmore to White River..... | 1,561 | \$ 9.40 |
| Medicine Hat to Sudbury.....     | 1,628 | 9.90    | Canmore to Sudbury.....     | 1,863 | 10.70   |
| Medicine Hat to Toronto.....     | 1,888 | 12.10   | Canmore to Toronto.....     | 2,123 | 12.90   |
|                                  |       |         | Drumheller to Toronto.....  | 2,107 | 12.70   |

## FUEL RESOURCES OF CANADA

### BITUMINOUS COAL FROM MONTREAL

|                 | Miles |        | Miles              |     |        |
|-----------------|-------|--------|--------------------|-----|--------|
| Cochrane.....   | 611   | \$4.00 | Toronto.....       | 334 | \$2.90 |
| Cornwall.....   | 68    | 1.00   | Timmins.....       | 601 | 4.38   |
| Hawkesbury..... | 78    | 1.00   | Actonvale.....     | 54  | 1.00   |
| Kingston.....   | 175   | 1.50   | Drummondville..... | 65  | 1.20   |
| North Bay.....  | 340   | 2.90   | St. Johns.....     | 28  | 0.90   |
| Ottawa.....     | 116   | 1.30   | Sherbrooke.....    | 101 | 1.30   |
| Renfrew.....    | 171   | 2.00   | Valleyfield.....   | 43  | 1.00   |

### U.S.A. ANTHRACITE

#### SCRANTON, LEHIGH, WYOMING MINES TO

|               | Egg, stove,<br>Miles | nut    | Pea              | Buckwheat<br>No. 1 | Smaller<br>sizes |
|---------------|----------------------|--------|------------------|--------------------|------------------|
| Montreal..... | 405                  | \$4.42 | \$4.06           | \$3.73             | \$3.06           |
| Ottawa.....   | 439                  | 4.67   | 4.31             | 3.91               | 3.23             |
| Quebec.....   | 575                  | 4.93   | 4.67             | 4.55               | 3.77             |
|               | Prepared<br>Miles    | sizes  | Smaller<br>sizes |                    |                  |
| Buffalo.....  |                      | \$2.93 | \$2.48           |                    |                  |
| Windsor.....  | 622                  | 4.54   | 4.09             |                    |                  |
| London.....   | 510                  | 4.40   | 3.95             |                    |                  |
| Hamilton..... | 430                  | 3.87   | 3.42             |                    |                  |
| Toronto.....  | 470                  | 4.08   | 3.63             |                    |                  |

ALL NET TONS

### 3. NATURAL GAS

Canada has a relatively small share of the great resources of natural gas on the North American continent, the greater part of which is found in the West. Natural gas is found in commercial quantities in New Brunswick, Ontario and Alberta.

#### New Brunswick

The only field in New Brunswick is the Stony Creek field, a small area covering about 20 square miles, 9 miles from Moncton, where 80 wells have been drilled. This field has been so systematically tested and developed that borings for a number of years have been confined to the deepening of old wells in order to reach the proven lower gas-bearing horizons.

The gas which is free from sulphur, of high heating value and a very cheap source of power to industrial concerns (approximately 50 cents per thousand cubic feet), is disposed of in Moncton, Hillsborough and vicinity.

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## THE CANADIAN INDUSTRIAL FIELD

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### Ontario

Natural gas is found in commercial quantities in the south-western part of the province, the chief gas fields at present being in Lambton, Kent, Norfolk, Haldimand and Welland Counties.

The peak of production was reached in 1917 when over 19,000,-000 thousand cubic feet were produced. In later years the production has diminished and the declining supply has called for stringent measures of conservation by the provincial Government.

The production and distribution of gas is controlled mainly by three companies: the Union Natural Gas Company, in Lambton, Kent and Essex Counties; the Dominion Gas Company, in Kent, Norfolk and Haldimand Counties; and the Provincial Natural Gas Company, in Welland and Haldimand Counties.

The price of gas ranges from approximately 50 to 80 cents per thousand cubic feet in the largest producing field—Tilbury in Kent county.

The heat value is approximately 1,050 B.T.U.'s per cubic foot.

### Alberta

The province of Alberta has the largest production of natural gas, as well as the greatest potential supply in Canada. Owing to the great activity in drilling for oil during the past decade, particularly in the Turner Valley field and in the Wainwright field, large flows of natural gas have been opened up, presenting the problem of economic utilization.

The principal producing fields are the Turner Valley field (about 35 miles south-west of Calgary), Medicine Hat, Bow Island (about 40 miles west of Medicine Hat), Viking-Wainwright field (about 80 miles south-east of Edmonton), and the Foremost field (about 6 miles south and west of the town of Foremost).

Flows of gas have also been developed at Many Islands Lake, Sweet Grass, Cypress Hills, Irma, Ribstone, Pelican Rapids, Peace River, and Pouce Coupé, but have not as yet been utilized commercially.

### Medicine Hat

The proved gas area in the vicinity of Medicine Hat covers about 40 or 50 square miles and it is believed that future drilling may open up wells to the northeast of this area.

Gas from the wells is used for domestic and industrial consumption in Medicine Hat. It sells for 25 cents per thousand cubic feet for domestic use, and from 3 to  $6\frac{1}{2}$  cents for industrial purposes. In view of its cheapness, many industrial concerns in Medicine Hat and Redcliff use it as fuel. In fact, the cheap rate for gas has been an important factor in attracting industries to this area. The heat value is about 1,050 B.T.U.'s per cubic foot.

### Bow Island

In 1912, the Canadian Western Natural Gas, Light, Heat and Power Company, Limited, was organized to develop this field and to supply gas by pipe-line to Calgary and other towns and cities in southern Alberta. Owing to the falling off in pressure and volume of the field, the company has brought in several large producers in the Foremost field which is connected to the above pipe-line at Burdett.

The gas sells in Calgary for 33.9 cents per thousand cubic feet for domestic use, 29.4 cents for commercial, and 17.2 cents for industrial purposes.

The average heating value of the gas ranges from 985 B.T.U.'s per cubic foot in the Bow Island field to 1,000 in the Foremost field.

### Turner Valley

In view of the activity in drilling for oil in this field, large flows of natural gas have been opened up. At the present not less than 200,000 thousand cubic feet of natural gas is wasted every 24 hours.

The Royalite Oil Company, Limited, operates a number of wells in this field, some of which produce crude oil and gas. The gas from these wells is a wet gas (yielding in some instances a gallon of gasoline per 1,000 cubic feet) and contains hydrogen sulphide in sufficient quantity to prevent it being used prior to treatment for domestic

purposes. As this line is connected with the main pipe-line from the Bow Island field, the rates for gas are, no doubt, the same as given for the latter field.

The heating value of the gas is approximately 1,130 B.T.U.'s per cubic foot of gas.

#### Viking Field

An extensive gas field has been developed over a large area lying between Viking and Birch Lake. The Northwestern Utilities, Limited, of Edmonton, have completed around twenty wells with large open flow capacities. These supplies could easily be increased by the flow of gas available from other wells drilled in the district. The above company has installed a pipe-line from the field to Edmonton. Small towns along the line are also supplied with gas.

Average price obtained for domestic use is 42 cents per thousand cubic feet, for commercial use 35·2 cents, and for industrial purposes, 30·3 cents per thousand cubic feet.

The heating value of the gas is around 980 B.T.U.'s per cubic foot.

#### 4. PETROLEUM

For years Canada has been actively seeking for and testing likely petroliferous formations, and the results of the efforts have been encouraging. That there are extensive petroleum resources is admitted, but a very considerable portion of them cannot at present be developed. Canada's oil production at present is obtained from New Brunswick, Ontario and Alberta.

##### New Brunswick

The oil producing area in New Brunswick is confined to a tract of about 8 square miles in Albert County—Stony Creek oil and gas fields. The present output is small.

##### Ontario

The first oil well drilled on the North American continent was in the southwestern peninsula of Ontario. For many years, this was the chief oil-producing centre in Canada. In 1925, however, it was passed by the Turner Valley oil field.

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## FUEL RESOURCES OF CANADA

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The main oil fields in the area are located at Petrolia, Oil Springs, and Bothwell, in Lambton and Kent Counties.

Oil production for last three years is as follows:—

| —   | 1927    | 1928    | 1929    |
|---|---------|---------|---------|
| Petroleum (barrels of 35 imperial gals.)..... | 139,606 | 134,094 | 121,194 |

The price of crude oil in Ontario is virtually the price of an equal grade of imported crude oil from the United States, delivered at the Canadian refinery. In 1929, the Petrolia crude ranged from \$1.90 to \$2.20 per barrel. Oil Springs, being a lighter oil, was 7 cents higher than the above prices.

The heating value of the oil is approximately 19,250 B.T.U.'s.

### Alberta

Alberta's contribution to the petroleum output of Canada began in 1913-14 when a number of wells were drilled in Turner Valley. The production, however, was small until October, 1924, when the big Royalite No. 4 came in with a production of approximately 20,000,000 cubic feet of gas and 550 barrels of crude naphtha per day.

In 1925, Alberta became the chief oil-producing province of the Dominion, and in 1929 produced over 88 per cent of the total production of Canada.

Oil in commercial quantities was obtained in three localities in Alberta in 1929, namely: Turner Valley in the foothills, 35 miles southwest of Calgary; the Red Coulee area of southern Alberta; and the Wainwright area.

[■] The search for oil is being actively carried on in other parts of the foothills; southern Alberta, Milk River; east of Lethbridge, in the Cypress [Hills]; Wainwright-Ribstone area, where geological structures appear favourable for the accumulation of oil.

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## THE CANADIAN INDUSTRIAL FIELD

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The output in 1929 was as follows (preliminary estimate):—

|                                 |               |
|---------------------------------|---------------|
| Naphtha 65° A.P.L. or over..... | 908,936 Brls. |
| Light Crude 30° to 60°.....     | 73,060 Brls.  |
| Heavy Crude 30° or less.....    | 15,363 Brls.  |
| Total.....                      | 997,359 Brls. |

### Refineries

Canadian refineries, situated at strategic points across the Dominion for convenience in marketing their products, treated in 1929 approximately 1,074,000,000 gallons of crude oil, only 3·5 per cent of which came from Canadian wells. The imported oils were obtained in the United States, Mexico and Peru.

In 1929, there were 15 refineries in Canada. Of these 4 were located in Ontario, 4 in Alberta, 2 in British Columbia, 2 in Quebec, and one in each of the provinces of Nova Scotia, Manitoba and Saskatchewan.

Very large quantities of crude petroleum are imported into Canada for various purposes, but chiefly to provide the necessary raw materials for the refineries throughout the Dominion.

### Bituminous Sands

In the McMurray area, some 300 miles to the north of the city of Edmonton, Alberta, occurs an extensive deposit of bituminous sand. This deposit may be regarded as a potentially valuable source of supply of separated bitumen, crude petroleum, and certain petroleum derivatives—notably fuel oil.





THE CANADIAN INDUSTRIAL FIELD

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CHAPTER X

THE MINERALS AND MINING  
INDUSTRY OF CANADA

Based on data supplied by the Department of Mines

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Issued by  
THE NATIONAL DEVELOPMENT BUREAU  
DEPARTMENT OF THE INTERIOR  
and  
THE DEPARTMENT OF TRADE AND COMMERCE

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Preliminary Edition



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# THE MINERALS AND MINING INDUSTRY OF CANADA

## 1. MINERALS BY NATURAL DIVISIONS

Canada, with an estimated area of 3,684,723 square miles embraces rather more than half of the main block of North America. Perhaps the simplest method of dealing with the minerals and mining activities in this vast territory is to consider them under the general outlines of five of its great natural regions or divisions.

### The Canadian Shield

The most outstanding of these divisions from the standpoint of minerals, is the Canadian or Precambrian Shield. It embraces over half the land area of Canada including 95 per cent of Quebec, three-fourths of Ontario, two-thirds of Manitoba, one-third of Saskatchewan, the northeast corner of Alberta, and the eastern three-quarters of the Northwest Territories.

The economic minerals mined within this area, comprising about one-third the total output of the Dominion, cover a wide field. In the range of metallics are found gold, nickel, copper, silver, lead, arsenic and zinc. Over 90 per cent of the world's nickel and a considerable portion of its cobalt are mined from its ores. In association with the nickel-copper ores are found the precious metals of the platinum group. Iron ores are known in several districts, and were formerly produced in quantity in the Lake Superior region.

The deposits of non-metallic ores are by no means unimportant, including feldspar, magnesite, graphite, mica, talc, pyrite, corundum, molybdenite, apatite, barytes, ceramic and other clays, building and ornamental stone and other structural materials.

### Northern Ontario

The present predominating mining region of this area is in Ontario, located between Cochrane on the main transcontinental line of the Canadian National Railway and the north shore of Georgian Bay. Concentrated in this relatively small area occur metallic ore bodies which account for over three-quarters of the total mineral output of the entire division. Here are situated the famous Hollinger gold mine, the high grade gold ores of Kirkland Lake, the renowned

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## THE CANADIAN INDUSTRIAL FIELD

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Cobalt silver camp, and the newer silver mines of South Lorrain and Gowganda. About 100 miles from Cobalt are the fabulously rich Sudbury nickel-copper ores, and in northwestern Quebec, not far from this Ontario mining region, are the recently discovered rich copper-gold deposits of the Rouyn camp.

### New Mining Camps

Probably the most important of the so-called new mining areas within the Canadian Shield is the Flin Flon region of northwestern Manitoba. In the Flin Flon district the principal deposit is a large copper-zinc ore body, the complexity of which baffled metallurgists for many years. Now, however, a satisfactory process has been evolved for its treatment and the erection of a smelter and water-power plant is practically completed. Another extensive ore body, also zinc-copper, is under development at Sherritt Gordon, 40 miles northeast of Flin Flon. Still another promising base metal area, also under development, is situated in the Sudbury Basin area near Sudbury. Among the comparatively new gold fields may be mentioned, the central Manitoba area southeast of Lake Winnipeg, the sector near Rouyn in western Quebec, and the Red Lake area in the Patricia district of Ontario.

Recent discoveries in this region cover a wide stretch of territory ranging from copper find in the Opemiska district of northern Quebec (not far from the somewhat older Chibougamau camp) to the gold strikes of Pascalis Township, Quebec and Bannockburn Township, Ontario, and to the copper find in the sub-arctic Coppermine River area of the Northwest Territories.

### The Pacific Coast Region

The Pacific Coast or Cordilleran region is pre-eminently noted for its metal mines. Within its confines, which include all of British Columbia and the Yukon, a part of western Alberta and a small section of the Northwest Territories, over 36 per cent of the value of the metallic output of Canada was produced in 1929, including 96 per cent of the lead, 87 per cent of the zinc, 58 per cent of the silver, 43 per cent of the copper, and 10 per cent of the gold.

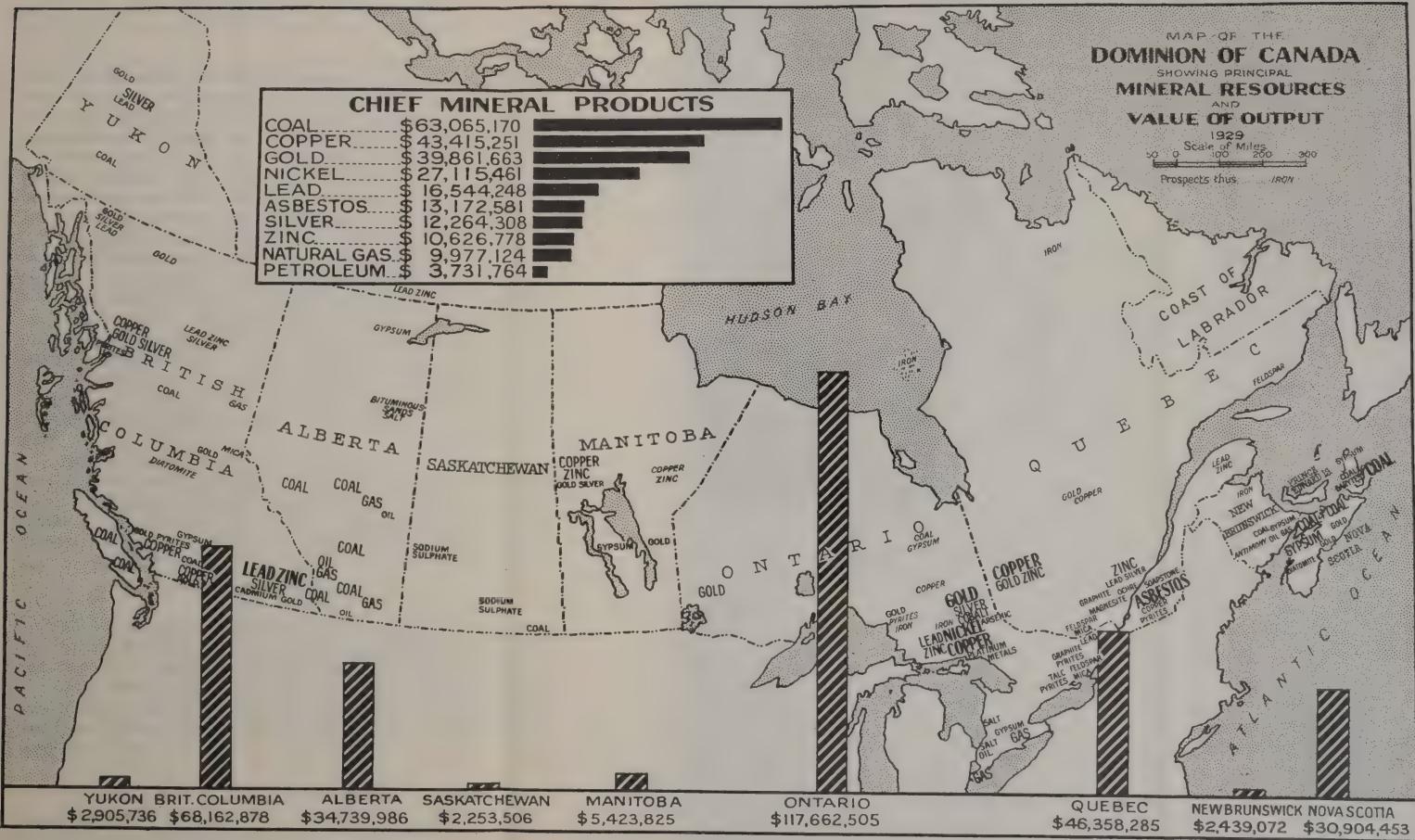
MAP OF THE  
DOMINION OF CANADA  
SHOWING PRINCIPAL  
MINERAL RESOURCES  
AND  
VALUE OF OUTPUT

1929  
Scale of Miles  
0 100 200 300

Prospects thus: IRON

CHIEF MINERAL PRODUCTS

|             |              |
|-------------|--------------|
| COAL        | \$63,065,170 |
| COPPER      | \$43,415,251 |
| GOLD        | \$39,861,663 |
| NICKEL      | \$27,115,461 |
| LEAD        | \$16,544,248 |
| ASBESTOS    | \$13,172,581 |
| SILVER      | \$12,264,308 |
| ZINC        | \$10,626,778 |
| NATURAL GAS | \$9,977,124  |
| PETROLEUM   | \$3,731,764  |





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## THE MINING INDUSTRY OF CANADA

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Copper from the ore bodies of British Columbia is an important factor in maintaining Canada's ranking as fourth among the copper producing nations of the world. The most important deposits occur near Anyox in the Portland Canal district, at Britannia Beach a few miles north of Vancouver, and at Copper Mountain, near Princeton.

Lead-zinc-silver ores are widespread, notably in southern British Columbia. There is found the Sullivan mine, the largest base metal mine in the British Empire and one of the world's greatest. Rich silver-lead ores are mined in the Mayo district of the Yukon.

The gold production of this region is obtained from both placer and lode sources. Alluvial deposits—the most notable of which was the Klondike placer camp—were formerly responsible for the bulk of the output, but the production of placer gold in recent years has declined greatly. The Klondike district of the Yukon is still the principal producing area with the Atlin, Cariboo and Quesnel districts of British Columbia smaller contributors. The bulk of the lode gold is obtained from the gold-silver ores of the Portland Canal district and from the refining of copper and other metallic ores. Bismuth and cadmium are recovered from base metal residues at Trail.

About one-sixth of the coal mined in Canada is produced in Pacific coast areas, the mines on the west coast of Vancouver Island furnishing about two-thirds of this output. The remainder is mined mainly in the Crowsnest and other coalfields along the southern Rockies. Other important non-metallics include gypsum, pyrite and fluorspar.

### The Western Plains

The Western or Interior Plains include the major portions of Alberta and Saskatchewan, the southwestern corner of Manitoba, and most of the western quarter of the Northwest Territories.

Coal, varying in grade from lignites to semi-anthracites, is the leading item of mineral output. Other minerals include natural gas, petroleum, gypsum and structural materials such as stone, clay, sand and gravel.

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## THE CANADIAN INDUSTRIAL FIELD

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The coal fields of this region constitute one of Canada's greatest potential mineral resources. In "The Coal Resources of the World," published in 1913, Canada was credited with coal reserves equivalent to 17 per cent of the entire world reserves. Of the Canadian total, nearly nine-tenths lies in the western plains with Alberta possessing the major share. Saskatchewan's share comprises the lignites found in the southern part of the province from which an increasing consumption is noted, both in the raw state and as manufactured briquettes.

Crude petroleum was first discovered in the Turner Valley field of Alberta in 1914, but it was not until 1924 that the value of the field was realized. Numerous wells have since been drilled, resulting in an increase in production from 180,000 barrels in 1925 to approximately 500,000 barrels in 1928 and not far from 1,000,000 barrels in 1929. A feature which stamps the Turner Valley as one of the most remarkable areas of its kind in the world is the fact that over 80 per cent of the yield is high-grade naphtha.

Natural gas was first found in Alberta in 1885, and the value of the production has increased to nearly \$4,700,000 in 1929. There are at least fourteen gas fields scattered throughout Alberta from the Rogers-Imperial in the extreme south to the Peace River field in the north. Several of these are supplying large quantities of gas for domestic and industrial purposes, while others not so fortunately situated still await markets.

The clays of Saskatchewan are found in greater variety and greater abundance than in any other province.

### The St. Lawrence Lowlands

In this fertile plain, which includes, in its area of over 35,000 square miles, the greater part of the agricultural and manufacturing sections of southern Ontario and Quebec, no metallic minerals of importance are found. The leading non-metals are salt, gypsum, natural gas, and petroleum, all found in southwestern Ontario, together with an abundance of structural materials, including clays suitable for the manufacture of brick and tile, occurring at intervals throughout the entire region.

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## THE MINING INDUSTRY OF CANADA

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Over 90 per cent of Canada's salt output is recovered from salt beds adjacent to the shores of Lake Huron and Lake St. Clair, and gypsum is quarried from deposits along the Grand River. An oil-field, situated in the southwestern extremity of the peninsula between Lakes Huron and Erie, supplied all the Canadian output of crude petroleum until 1909 and still is an important factor in augmenting Canada's scanty supply of this commodity. Natural gas is found in the counties bordering the north shore of Lake Erie. This field with a record of over 30 years' production still has over a thousand active gas wells.

### Maritime Region

The Maritime or Appalachian area includes in its scope the provinces of Nova Scotia, New Brunswick, Prince Edward Island and the Eastern Townships and Gaspé peninsula of Quebec.

Coal is by far the most important mineral product, providing about half the bituminous coal mined in the Dominion. The most important deposits are found in the submarine coal field of the Sydney area of Cape Breton, the Pictou and the Cumberland field on the mainland of Nova Scotia, and the Minto field of New Brunswick.

Commercial deposits of long fibre asbestos, the "fire-proof wool" of commerce, are found in but a few countries and it is from the Eastern Townships of Quebec that much of the world's supply of high grade chrysotile spinning fibre has been obtained. Since 1877, when the deposits now being worked were discovered, over 4 million tons of long and short fibre and asbestos waste, valued at more than \$150,000,000, have been marketed.

Another important non-metal mined in the Maritime areas is gypsum. Extensive beds of this dazzling white mineral are prevalent in a belt of rocks extending from southeastern New Brunswick across northern Nova Scotia to Cape Breton. The principal producing districts are found in Hants County, Nova Scotia, in the Hillsboro area of New Brunswick, and in Victoria and Inverness Counties, Cape Breton.

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## THE CANADIAN INDUSTRIAL FIELD

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Other non-metallics found in this region include, the only producing rock salt property in Canada situated at Malagash, Nova Scotia, a small active petroleum and natural gas field at Stony Creek near Moncton, New Brunswick, and working deposits of sandstone (for grindstones and pulpstones), diatomite, bog manganese, barytes, oil shales, clays, building stone and other structural materials.

As relatively large areas of the Maritime region have been subjected to disruptive volcanic activity accompanied by igneous intrusions, it might be expected that economic deposits of metallic ores would be widespread. This expectation has not yet been fully realized although the district has already produced about \$19,000,000 worth of gold, considerable iron ore, and intermittent shipments of chromite, copper, tungsten, and antimony ores. A new concentrator has recently been installed near Stirling in southeastern Cape Breton Island, to treat lead-zinc-copper ore bodies found there.

Among the metallic occurrences now receiving attention are those of lead-zinc in Gaspé, copper, and antimony in New Brunswick, gold in peninsular Nova Scotia, and copper and lead-zinc-copper in Cape Breton.

### 2. MINERAL PRODUCTION

The growth in the output of minerals from these divisions during the past half century has been phenomenal—from a production of less than \$4,000,000 in 1878 to \$64,421,000 in 1900, to \$137,109,000 in 1915 and \$274,989,000 in 1928. The figures for the last few years are still more impressive, showing an increase from \$171,923,000 in 1921 to a total of \$310,850,000 in 1929, an advance of 81 per cent in 8 years. The production per capita had grown from \$2.23 in 1886 to \$31.72 in 1929.

**THE MINING INDUSTRY OF CANADA**

**MINERAL PRODUCTION OF CANADA, 1919, 1929 AND 1930\***

|                                    | 1919       |                    | 1929        |                    | 1930 (6 months) |               |
|------------------------------------|------------|--------------------|-------------|--------------------|-----------------|---------------|
|                                    | Quantity   | Value              | Quantity    | Value              | Quantity        | Value         |
| <b>Metallics—</b>                  |            |                    |             |                    |                 |               |
| Arsenic..... lb.                   | 6,778,000  | \$ 509,924         | 5,230,088   | \$ 171,320         | 2,128,902       | \$ 67,874     |
| Bismuth..... "                     | "          | "                  | 594,329     | 307,114            | 5,799           | 3,031         |
| Cadmium..... "                     | "          | "                  | 773,976     | 675,294            | 163,843         | 126,159       |
| Cobalt..... "                      | 530,371    | 1,325,928          | 929,415     | 1,801,915          | 325,727         | 598,007       |
| Copper..... "                      | 75,053,581 | 14,028,265         | 248,120,760 | 43,415,251         | 157,536,826     | 22,361,384    |
| Gold..... fine oz.                 | 766,764    | 15,850,423         | 1,928,308   | 39,861,663         | 976,233         | 20,180,568    |
| Lead..... lb.                      | 43,827,699 | 3,053,037          | 326,522,566 | 16,544,248         | 172,204,062     | 7,229,984     |
| Platinum metals..... fine oz.      | 110        | 7,131              | 29,837      | 1,656,045          | 27,362          | 1,185,941     |
| Nickel..... lb.                    | 44,544,883 | 17,817,953         | 110,275,912 | 27,115,461         | 55,113,525      | 12,995,271    |
| Silver..... fine oz.               | 16,020,657 | 17,802,474         | 23,143,261  | 12,264,308         | 13,223,559      | 5,457,098     |
| Zinc..... lb.                      | 32,194,707 | 2,362,448          | 197,267,087 | 10,626,778         | 123,371,385     | 4,826,289     |
| Other metallics.....               | "          | 1,015,134          | "           | 14,659             | "               | "             |
| Total.....                         | "          | 73,772,717         | "           | 154,454,056        | "               | 75,031,606    |
| <b>Non-Metallics (Fuels)—</b>      |            |                    |             |                    |                 |               |
| Coal..... tons                     | 13,681,218 | \$ 54,413,349      | 17,496,557  | \$ 63,065,170      | 7,159,761       | \$ 25,854,127 |
| Natural gas..... M cu. ft.         | 19,937,769 | 4,176,037          | 28,378,462  | 9,977,124          | 15,928,745      | 5,665,391     |
| Peat..... tons                     | 986        | 6,561              | 2,607       | 13,339             | 1,543           | 7,856         |
| Petroleum, crude..... brls.        | 240,466    | 736,324            | 1,117,368   | 3,731,764          | 639,884         | 2,171,382     |
| Total.....                         | "          | 59,332,271         | "           | 76,787,397         | "               | 33,698,756    |
| <b>Other Non-Metallics—</b>        |            |                    |             |                    |                 |               |
| Asbestos..... tons                 | 159,236    | \$ 10,975,369      | 306,055     | \$ 13,172,581      | 123,693         | \$ 4,570,733  |
| Feldspar..... "                    | 14,679     | 86,231             | 37,527      | 340,471            | 7,858           | 80,566        |
| Fluorspar..... "                   | 5,063      | 97,837             | 1,847       | 208,120            | 20              | 350           |
| Graphite..... "                    | 1,360      | 100,113            | 1,661       | 103,144            | 1,326           | 79,769        |
| Gypsum..... "                      | 2,020      | 60,516             | 1,047       | 106,354            | "               | "             |
| Iron..... "                        | 299,063    | 1,215,287          | 1,211,689   | 3,346,696          | 440,065         | 1,284,474     |
| Iron Oxides..... "                 | 11,862     | 113,427            | 6,518       | 115,932            | 1,441           | 34,840        |
| Magnesite..... "                   | 11,273     | 328,465            | 18,809      | 491,170            | 7,360           | 183,603       |
| Mica..... "                        | 2,754      | 273,788            | 4,053       | 118,549            | 400             | 52,721        |
| Quartz..... "                      | 94,991     | 527,635            | 265,949     | 561,527            | 56,757          | 126,595       |
| Salt..... "                        | 148,301    | 1,397,929          | 330,264     | 1,578,086          | 146,484         | 849,453       |
| Talc..... "                        | 18,642     | 116,295            | 15,509      | 181,212            | 6,822           | 79,369        |
| Other non-metallics..... "         | "          | 866,892            | "           | 691,087            | "               | 287,574       |
| Total.....                         | "          | 16,159,892         | "           | 21,073,959         | "               | 7,630,047     |
| <b>Clay Products—</b>              |            |                    |             |                    |                 |               |
| Brick..... M                       | 366,258    | \$ 5,164,556       | 458,727     | \$ 8,007,202       |                 |               |
| Drain tile, sewer pipe, etc.....   | "          | 1,690,656          | "           | 2,725,203          |                 |               |
| Fire clay products.....            | "          | 389,354            | "           | 416,680            |                 |               |
| Hollow blocks.....                 | "          | 76,673             | "           | 2,214,384          |                 |               |
| Other products.....                | "          | 585,127            | "           | 540,174            |                 |               |
| Total.....                         | "          | 7,906,366          | "           | 13,904,643         |                 |               |
| <b>Other Structural Materials—</b> |            |                    |             |                    |                 |               |
| Cement..... brls.                  | 4,995,257  | \$ 9,802,433       | 12,284,081  | \$ 19,337,235      |                 |               |
| Lime..... tons                     | "          | 2,310,260          | 674,087     | 5,908,610          |                 |               |
| Sand and Gravel..... "             | "          | 2,680,460          | 27,846,945  | 7,317,814          |                 |               |
| Stone..... "                       | "          | 4,225,937          | 9,622,424   | 12,066,532         |                 |               |
| Other products.....                | "          | 495,707            | "           | "                  |                 |               |
| Total.....                         | "          | 19,515,144         | "           | 44,630,191         |                 |               |
| <b>Grand Total.....</b>            | "          | <b>176,686,390</b> | "           | <b>310,850,246</b> | "               | "             |

No reports  
collected  
owing to seasonal  
nature of  
operations.

## THE CANADIAN INDUSTRIAL FIELD

VALUE OF MINERAL PRODUCTION IN CANADA BY PROVINCES, 1929

|                               | Nova Scotia | New Brunswick | Quebec     | Ontario    | Manitoba | Saskatchewan       | Alberta        | British Columbia | Yukon     |
|-------------------------------|-------------|---------------|------------|------------|----------|--------------------|----------------|------------------|-----------|
| <i>Metallics—</i>             |             |               |            |            |          |                    |                |                  |           |
| Arsenic.....                  | \$          | \$            | \$         | \$         | \$       | \$                 | \$             | \$               | \$        |
| Bismuth.....                  | —           | —             | —          | 154,887    | —        | —                  | —              | 16,433           | —         |
| Cadmium.....                  | —           | —             | —          | 23,413     | —        | —                  | —              | 283,701          | —         |
| Cobalt.....                   | —           | —             | —          | —          | —        | —                  | —              | 675,294          | —         |
| Copper.....                   | —           | —             | —          | 1,801,915  | —        | —                  | —              | —                | —         |
| Gold.....                     | —           | —             | 10,019,901 | 14,622,572 | —        | —                  | —              | 18,772,778       | —         |
| Lead.....                     | —           | —             | 1,876,961  | 33,535,234 | 464,186  | —                  | 103            | 3,187,680        | 741,954   |
| Nickel.....                   | —           | —             | 270,616    | 294,431    | —        | —                  | —              | 15,755,189       | 424,012   |
| Platinum metals.....          | —           | —             | —          | 27,115,461 | —        | —                  | —              | —                | —         |
| Silver.....                   | —           | —             | —          | 1,646,381  | —        | —                  | —              | 9,664            | —         |
| Zinc.....                     | —           | —             | 431,268    | 4,711,462  | 1,401    | —                  | —              | 5,382,185        | 1,737,922 |
| Miscellaneous.....            | —           | —             | 1,058,731  | 297,190    | —        | —                  | —              | 9,270,857        | —         |
| Total.....                    | 55,615      | —             | 13,671,236 | 84,202,946 | 465,587  | —                  | 103            | 53,154,681       | 2,903,888 |
| <i>Non-Metallics (Fuels)—</i> |             |               |            |            |          |                    |                |                  |           |
| Coal.....                     | 28,071,956  | 909,169       | —          | —          | —        | 993,226,22,928     | 182,10,160,789 | 1,848            | —         |
| Natural Gas.....              | —           | 333,002       | —          | 4,959,695  | 180      | —                  | 4,684,247      | —                | —         |
| Peat.....                     | —           | —             | 8,839      | 4,500      | —        | —                  | —              | —                | —         |
| Petroleum, crude.....         | —           | 19,909        | —          | 253,678    | —        | —                  | 3,458,177      | —                | —         |
| Total.....                    | 28,071,956  | 1,262,080     | 8,839      | 5,217,873  | 180      | 993,226,31,070,606 | 10,160,789     | 1,848            | —         |
| <i>Other Non-Metallics—</i>   |             |               |            |            |          |                    |                |                  |           |
| Asbestos.....                 | —           | —             | 13,172,581 | —          | —        | —                  | —              | —                | —         |
| Diatomite.....                | 5,080       | —             | 133,492    | 206,979    | —        | —                  | —              | 5,250            | —         |
| Feldspar.....                 | —           | —             | —          | —          | 1,120    | —                  | —              | 267,000          | —         |
| Fluorspar.....                | —           | —             | 12,652     | 90,522     | —        | —                  | —              | —                | —         |
| Graphite.....                 | —           | —             | 103,514    | —          | —        | —                  | —              | 2,730            | —         |
| Grindstones.....              | 1,152,160   | 485,982       | —          | 113,932    | 832,689  | 631,051            | —              | 243,814          | —         |
| Gypsum.....                   | —           | —             | —          | 491,170    | —        | —                  | —              | 2,000            | —         |
| Iron Oxides.....              | —           | —             | —          | 72,630     | 45,919   | —                  | —              | —                | —         |
| Magnesite.....                | —           | —             | —          | 132,532    | 316,050  | 35,610             | —              | 45,947           | —         |
| Quartz.....                   | 31,388      | —             | —          | —          | —        | —                  | —              | —                | —         |

## THE MINING INDUSTRY OF CANADA

VALUE OF MINERAL PRODUCTION IN CANADA BY PROVINCES, 1929—Concluded

|  | Nova Scotia | New Brunswick | Quebec     | Ontario      | Manitoba  | Saskatchewan | Alberta    | British Columbia | Yukon     | \$ |
|--|-------------|---------------|------------|--------------|-----------|--------------|------------|------------------|-----------|----|
| Salt.....  | \$ 157,662  | —             | —          | \$ 1,420,424 | —         | —            | —          | —                | —         | —  |
| Silica brick.....                                    | 93,207      | —             | —          | 80,374       | —         | —            | —          | —                | —         | —  |
| Sulphur (Pyrites, etc.).....                         | —           | —             | —          | 55,516       | —         | —            | —          | 226,208          | —         | —  |
| Talc.....  | 2,341       | —             | —          | 180,492      | —         | —            | —          | 720              | —         | —  |
| Miscellaneous.....                                   | —           | 1,800         | 51,274     | 14,140       | —         | —            | 70,112     | 3,956            | 12,710    | —  |
| Total.....   | 1,441,948   | 591,296       | 14,253,382 | 3,240,225    | 666,661   | 70,112       | 3,956      | 806,379          | —         | —  |
| <i>Clay Products—</i>                                |             |               |            |              |           |              |            |                  |           |    |
| Brick, building, common, face, ornamental, etc. .... | 217,985     | 99,288        | 2,475,403  | 3,665,239    | 305,421   | 230,306      | 606,671    | 306,457          | —         | —  |
| Brick, sewer.....                                    | —           | —             | —          | 92,316       | —         | —            | 43,384     | 2,934            | 4,272     | —  |
| Brick, fire.....                                     | 11,340      | —             | —          | —            | —         | —            | 5,965      | 624              | 193,385   | —  |
| Fireclay blocks and shapes.....                      | 10,669      | 1,863         | —          | —            | —         | —            | —          | —                | 16,105    | —  |
| Hollow blocks.....                                   | 675         | 1,351         | —          | 972,993      | 41,254    | 106,643      | 195,503    | 21,742           | —         | —  |
| Drain tile.....                                      | 182,076     | 23,734        | 536,684    | 629,322      | 15,565    | 111,072      | 195,503    | 151,068          | —         | —  |
| Sewer pipe, copings, flue linings, etc. ....         | 5,284       | —             | 28,500     | —            | —         | 1,000        | 7,711      | 32,934           | —         | —  |
| Pottery.....   | 225,128     | —             | 147,115    | 1,167,463    | —         | —            | 335,954    | 130,227          | —         | —  |
| Other clay products.....                             | —           | 33,770        | —          | 96,394       | —         | —            | 193,030    | —                | 10,237    | —  |
| Total.....   | 653,157     | 160,006       | 3,187,702  | 6,830,162    | 362,240   | 502,522      | 1,342,427  | 866,427          | —         | —  |
| <i>Other Structural Materials—</i>                   |             |               |            |              |           |              |            |                  |           |    |
| Cement.....  | —           | —             | 7,120,374  | 6,608,246    | 2,350,606 | —            | 1,770,786  | 1,487,223        | —         | —  |
| Lime.....  | 154,187     | 174,553       | 1,264,194  | 3,364,411    | 361,104   | —            | 79,569     | 510,592          | —         | —  |
| Sand and gravel.....                                 | 151,368     | 46,167        | 1,534,699  | 3,162,379    | 322,430   | 687,646      | 447,993    | 665,132          | —         | —  |
| Stone.....   | 376,222     | 204,970       | 5,317,859  | 4,736,263    | 895,017   | —            | 24,546     | 511,655          | —         | —  |
| Total.....   | 681,777     | 425,690       | 15,237,126 | 18,171,299   | 3,929,157 | 687,646      | 2,322,894  | 3,174,602        | —         | —  |
| Grand Total.....                                     | 30,904,453  | 2,439,072     | 46,358,285 | 117,662,505  | 5,432,825 | 2,253,506    | 34,739,986 | 68,162,878       | 2,905,736 | —  |

# THE CANADIAN INDUSTRIAL FIELD

## 3. MINERAL INDUSTRIES

The mineral industries rank third in point of value and first in point of public interest among Canada's developed resources. The following table briefly summarizes the more important statistical items.

**MINERAL PRODUCING INDUSTRIES IN CANADA, 1929**

| —  | Number<br>of<br>firms | Capital<br>employed | Number<br>of<br>employees | Salaries<br>and<br>wages | Income<br>from<br>sales |
|--|-----------------------|---------------------|---------------------------|--------------------------|-------------------------|
|  |                       | \$                  |                           | \$                       | \$                      |
| <b>BY INDUSTRIES</b>                                 |                       |                     |                           |                          |                         |
| <i>Metal Mining—</i>                                 |                       |                     |                           |                          |                         |
| Alluvial gold.....                                   | 68                    | 7,237,850           | 488                       | 586,193                  | 836,006                 |
| Axiferous quartz.....                                | 80                    | 135,166,105         | 8,660                     | 14,258,733               | 37,275,986              |
| Copper-gold-silver.....                              | 144                   | 52,564,697          | 5,243                     | 8,498,755                | 21,834,907              |
| Silver.....  | 27                    | 15,820,435          | 1,149                     | 1,532,333                | 3,949,155               |
| Silver-lead-zinc.....                                | 149                   | 50,573,661          | 4,153                     | 8,482,392                | 22,748,089              |
| Nickel-copper.....                                   | 2                     | 19,448,290          | 3,219                     | 3,105,875                | 7,967,640               |
| Miscellaneous.....                                   | 8                     | 6,050               | 94                        | 42,837                   | 6,400                   |
| Smelting and refining.....                           | 7                     | 146,699,085         | 8,119                     | 13,772,393               | *68,438,022             |
| Total.....   | 485                   | 427,498,173         | 31,125                    | 50,279,511               | 163,050,366             |
| <i>Non-Metal Mining, including Fuels—</i>            |                       |                     |                           |                          |                         |
| Coal.....  | 357                   | 141,766,727         | 29,739                    | 42,376,378               | 59,584,545              |
| Natural gas.....                                     | 145                   | 68,592,709          | 1,953                     | 2,275,147                | 8,555,971               |
| Petroleum.....                                       | 231                   | 54,526,398          | 2,221                     | 3,748,689                | 4,368,374               |
| Abrasives.....                                       | 9                     | 790,791             | 154                       |                          |                         |
| Asbestos.....  | 7                     | 33,248,957          | 3,391                     | 4,410,535                | 13,172,581              |
| Feldspar.....  | 19                    | 203,443             | 209                       | 164,440                  | 340,471                 |
| Gypsum.....  | 17                    | 7,434,605           | 987                       | 1,051,213                | 3,345,696               |
| Iron oxides.....                                     | 4                     | 159,23              | 48                        | 47,324                   | 115,932                 |
| Mica.....  | 14                    | 281,205             | 83                        | 47,128                   | 116,949                 |
| Quartz.....  | 19                    | 1,000,232           | 279                       | 189,451                  | 561,527                 |
| Salt.....  | 8                     | 4,576,543           | 424                       | 516,453                  | 1,578,086               |
| Talc and soapstone.....                              | 5                     | 654,635             | 86                        | 74,300                   | 229,198                 |
| Miscellaneous.....                                   | 38                    | 4,042,638           | 506                       | 545,216                  | 1,502,574               |
| Total.....   | 873                   | 317,302,496         | 40,080                    | 55,602,313               | 93,596,188              |
| <i>Clay Products and Other Structural Materials—</i> |                       |                     |                           |                          |                         |
| Brick and tile.....                                  | 173                   | 27,503,688          | 4,740                     | 4,694,434                |                         |
| Clay sewer pipe.....                                 | 3                     | 3,694,716           | 391                       | 495,666                  | 13,904,643              |
| Fir-clay products and other clays.....               | 6                     | 2,295,498           | 244                       | 359,294                  |                         |
| Stoneware and pottery.....                           | 4                     | 696,154             | 155                       | 177,620                  |                         |
| Cement.....  | 8                     | 50,881,818          | 2,546                     | 3,523,595                | 19,337,235              |
| Lime.....  | 46                    | 7,404,677           | 1,382                     | 1,393,092                | 5,908,610               |
| Sand and gravel.....                                 | 541                   | 9,154,055           | 8,758                     | 2,505,223                | 7,317,814               |
| Stone.....   | 247                   | 20,589,758          | 5,681                     | 5,459,761                | 12,066,532              |
| Total.....   | 1,028                 | 122,220,364         | 23,897                    | 18,608,687               | 58,534,834              |
| <b>GRAND TOTAL.....</b>                              | <b>2,386</b>          | <b>867,021,033</b>  | <b>95,102</b>             | <b>124,490,511</b>       | <b>315,181,388</b>      |
| <b>BY PROVINCES</b>                                  |                       |                     |                           |                          |                         |
| <i>Nova Scotia.....</i>                              |                       | 70                  | 67,356,946                | 14,745                   | 21,035,756              |
| <i>New Brunswick.....</i>                            |                       | 36                  | 4,945,074                 | 1,354                    | 1,246,456               |
| <i>Quebec.....</i>                                   |                       | 412                 | 146,332,805               | 19,678                   | 18,886,275              |
| <i>Ontario.....</i>                                  |                       | 1,012               | 302,937,672               | 24,924                   | 34,897,624              |
| <i>Manitoba.....</i>                                 |                       | 43                  | 18,020,285                | 1,819                    | 2,375,990               |
| <i>Saskatchewan.....</i>                             |                       | 72                  | 6,097,476                 | 1,421                    | 1,139,373               |
| <i>Alberta.....</i>                                  |                       | 396                 | 142,942,397               | 13,824                   | 19,915,537              |
| <i>British Columbia.....</i>                         |                       | 321                 | 170,575,223               | 16,882                   | 26,073,143              |
| <i>Yukon.....</i>                                    |                       | 24                  | 7,813,153                 | 455                      | 930,513                 |
| <b>CANADA.....</b>                                   | <b>2,386</b>          | <b>867,021,033</b>  | <b>95,102</b>             | <b>124,490,511</b>       | <b>315,181,388</b>      |

\*Represents the value added by smelting.

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## THE MINING INDUSTRY OF CANADA

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### 4. NON-FERROUS SMELTING AND REFINING INDUSTRY

The striking increase in the Canadian output of minerals during the last few years has been more than paralleled by the expansion of the non-ferrous smelting and refining industry. During the period 1924-29 the value of smelter products increased from 42 million to 110 million dollars; the capital employed more than doubled to reach a total of \$147,000,000; the number of employees increased from 5,500 to 8,000; and the wages paid advanced from a little over 8 million to  $13\frac{3}{4}$  million dollars.

With the exception of aluminum ores, which are imported, this industry is almost entirely engaged in the treatment of Canadian ores.

In Quebec the Noranda smelter produces blister copper from the copper-gold ores of the Horne mine. Customs copper ores are also treated.

At Arvida, Aluminum Limited operates a huge metallurgical plant where imported bauxite is electrically smelted and refined to metallic aluminum. This company also has an electric reduction plant at Shawinigan Falls.

In Ontario the International Nickel Company treats the nickel-copper ores of the Sudbury district at two smelters, one located at Coniston and the other at Copper Cliff. Most of the resultant nickel-copper matte is shipped to the company's refinery at Port Colborne, where converter copper carrying gold and silver, refined and electrolytic nickel, nickel oxide, and residues of the platinum-metals group are produced. The Mond refinery at Clydach, Wales, is supplied with washed nickel sulphide from Port Colborne and the platinum-metals residues are shipped to the refinery at Acton, England, for final treatment. The remainder of the matte is shipped to Huntingdon, West Virginia for the production of Monel metal.

Cobalt-silver ores from the silver camps of northern Ontario, are largely treated at the customs smelter of the Deloro Smelting and Refining Company at Deloro. The products here include silver, cobalt and nickel metals, cobalt and nickel oxides and salts, white

arsenic, insecticides and alloys. The Kingdon Mining and Smelting Company produces high grade pig lead from the ores of the Kingdon mine near Galetta.

In British Columbia the Consolidated Mining and Smelting Company smelts and refines, at Trail, ores from its own mines and those of many customs shippers. The chief products are refined lead, zinc, silver, copper, gold, cadmium and bismuth. The smelter of Granby Consolidated at Anyox, produces blister copper from the ores of the district.

#### New Developments

The exports of Canadian ores, concentrates and unrefined metals will be considerably reduced and the domestic smelting and refining of many new ore bodies effected when metallurgical developments now under way are completed.

The International Nickel Company has recently erected and placed in operation at Copper Cliff a large smelter to treat the newly discovered high copper-nickel ore bodies of the Frood mine. There, in order to effect the separation of the matte into its nickel and copper constituents (top and bottom smelting) a plant is being constructed which will ultimately replace a similar installation at Port Colborne and thus obviate the transhipment of a good deal of the copper. The size of the electrolytic nickel refinery at Port Colborne has been increased considerably in the last two years.

A small smelter was blown in at Falconbridge near Sudbury early in 1930, treating copper-nickel ores. At Noranda the capacity of the smelter has lately been doubled and the concentrator greatly expanded.

In northern Manitoba at Flin Flon the Hudson Bay Mining and Smelting Company has erected a copper smelter and electrolytic zinc refinery to treat the copper-zinc ores of the Flin Flon mine and customs ores of the district.

At Copper Cliff the largest electrolytic copper refinery in the British Empire (rated capacity 120,000 tons annually) has recently been placed in operation under the aegis of International Nickel,

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## THE CANADIAN INDUSTRIAL FIELD

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American Metals and Consolidated Mining and Smelting Company. Another copper refinery (rated capacity 75,000 tons annually) is being built by Canadian Copper Refiners at Montreal East, to refine blister copper from Noranda, Flin Flon and other producers.

### 5. THE IRON AND STEEL INDUSTRY

The smelting of iron ores in Canada is carried on by four companies: The Dominion Steel and Coal Corporation, Ltd., at Sydney, Nova Scotia (4 blast furnaces, 1,450 long tons daily capacity); The Steel Co. of Canada, Ltd., Hamilton, Ontario (2 blast furnaces, 825 tons); Canadian Furnace Co., Ltd., at Port Colborne, Ontario (1 blast furnace, 350 tons); and Algoma Steel Corporation, Ltd., Sault Ste. Marie, Ontario (4 blast furnaces, 1,600 tons). The production of pig iron by these concerns in 1929 amounted to 1,090,000 long tons. Blast furnace charges included 1,925,000 long tons of iron ore, 600,000 short tons of limestone and 1,180,000 short tons of coke. Practically all the iron ore was imported from the Lake Superior region of United States and from the Wabana mines of Newfoundland, Canadian ores not being of sufficiently high grade to compete in price with the imported varieties. Only 130,000 tons of the limestone used and 430,000 tons of coke were of domestic origin.

The total consumption of pig iron in Canada amounted to 1,115,000 long tons in 1929. Steel production amounted to 1,310,000 tons of ingots and 70,000 tons of steel castings. Ferro-alloy production, including high grade ferro-manganese and several grades of ferro-silicon, totalled 80,000 long tons.

### 6. CANADA AS A FACTOR IN WORLD METAL MARKETS

Through the discovery and development of a wide range of metallic ores Canada has attained a substantial measure of world prominence in the production of many of the chief metals of commerce. Canada has a virtual monopoly on nickel, supplying more than 90 per cent of world requirements and also produces over half the cobalt used. Canada ranks third in the world production of gold and silver, fourth in lead and copper and sixth in zinc, according

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## THE MINING INDUSTRY OF CANADA

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to 1929 figures. Furthermore, owing to the relatively small domestic consumption of these mineral products the greater part of the output is exported. The following summary discusses briefly the market potentialities of several important Canadian metals.

### Copper

The present annual output of the "red metal" is about 300,000,-000 pounds, with a domestic consumption of 110,000,000 pounds, leaving 190,000,000 pounds for export.

### FUTURE POSSIBILITIES

Within the next ten years, if present plans materialize, the amount of Canadian copper available for export will have more than doubled. One observer, commenting on the fact that the rich copper-nickel ores of the Sudbury district are expected to yield over 300,000,000 pounds of copper annually by 1937, and that Noranda, Flin Flon, Sherritt Gordon and other new copper properties would also be in full production to further supplement the output of the older producers, estimated that by 1937 the annual output would be well in excess of 600,000,000 pounds.

### REFINED COPPER

In the past the major portion of Canadian copper was exported as ore, concentrates and blister, and domestic requirements supplied mainly by imports of refined copper and products. With the early completion of the new refineries, however, increasing amounts of refined copper will be produced both for domestic purposes and for export.

### Nickel

The developed ore reserves of the Sudbury district in Ontario are capable of supplying the world's requirements of nickel for many years. The output is therefore only limited by available markets.

During the war years the consumption of nickel reached large proportions—92,507,000 pounds in 1918. In 1922, due to the naval

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## THE CANADIAN INDUSTRIAL FIELD

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agreement limiting armaments which wiped out nearly half the existing market, and to the availability of accumulated war stocks, the production of nickel fell to a low of 17,600,000 pounds.

Largely by a campaign of scientific research and advertising, new uses for the metal have been developed and old ones extended to the extent that in 1929 a new record output of 110,000,000 pounds was made. Further substantial increases are anticipated in the future.

### Lead and Zinc

Over 85 per cent of Canada's lead and zinc output has for many years been mined in British Columbia, and the very large increases in the yield of these metals registered since 1920 may be largely credited to the successful development of a process for economically treating the complex lead-zinc-silver ores of southern British Columbia. The present production of lead is at the rate of 150,000-165,000 tons annually, and that of zinc 100,000-125,000 tons. The corresponding domestic consumptions are 39,000<sup>1</sup> tons and 20,000<sup>1</sup> tons, the remainder of the production being exported.

### FUTURE OUTPUT

From the ore blocked out in producing mines and in the many new properties in British Columbia, northern Manitoba, northern Ontario and northwestern Quebec, the output of both lead and zinc could be easily doubled. However, while the production of lead will in all probability continue to increase and certain advances will be made in the recovery of zinc as a by-product in the treatment of copper ores, the full increase in production to be expected from such large ore reserves is likely to be delayed until the market price for these metals returns to higher levels.

### Aluminum

Although no commercial ores of aluminum are found in Canada the industry has already assumed important proportions, due almost entirely to the availability of a cheap and plentiful supply of hydro-

<sup>1</sup>American Bureau of Metals statistics.

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## THE MINING INDUSTRY OF CANADA

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electric power. The production of ingot aluminum from imported ores has risen from 22,000,000<sup>1</sup> pounds in 1922 to 66,000,000<sup>1</sup> pounds in 1929, placing Canada third to the United States and Germany in world output. The magnitude of the works at Arvida and the great chain of hydro-electric installations being built along the Saguenay River point to still greater participation of Canadian aluminum in the markets of the world.

### Gold

Of recent years Canada has been an increasingly important contributor to world stocks of gold. The 1930 production will not fall far short of \$42,500,000, constituting a new high record for all time. With the producing fields as a whole steadily increasing their yields, several new fields now being tested, and greater amounts of gold being produced each year in copper, nickel and other base metal operations, there is every reason to believe that Canada's output of gold will continue to show important advances.

### Silver

The silver mining industry in Canada may be separated into two divisions; the first embracing mining operations where silver is the primary product, and the second where silver is a by-product. In the first category, material declines in output are indicated. The price of silver has been falling rapidly for the past two years and has now reached a point where only those companies mining high-grade ore are likely to make a profit. In the second division, however, the production of silver may be expected to advance as the chief metallic ores carrying silver as a by-product—copper, nickel, gold, lead and zinc—are being mined in increasing quantities. On the whole therefore, even taking into consideration the very low price of silver, no drastic curtailment in the present production rate of 22,000,000 ounces is anticipated.

### Platinum Metals

Practically all the platinum metals—platinum, palladium, rhodium, iridium, etc., produced in Canada are recovered from the nickel-copper ores of the Sudbury district. With the general adop-

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<sup>1</sup>American Bureau of Metals statistics.

tion of the electrolytic method of refining nickel at Port Colborne and the large projected output of the new Frood mine ore high in platinum, great increases in the yield of these metals are expected.

### 7. THE ADMINISTRATION OF MINERAL LANDS

The Dominion Government administers the lands and minerals in the Northwest Territories and Yukon, and the following is a list of the principal mining laws and regulations relating to those Territories:—

|                            |                           |
|----------------------------|---------------------------|
| Yukon Placer Mining Act,   | Oil and Gas Regulations,  |
| Yukon Quartz Mining Act,   | Petroleum and Natural Gas |
| Quartz Mining Regulations, | Regulations,              |
| Placer Mining Regulations, | Quarrying Regulations.    |
| Coal Mining Regulations,   |                           |

Copies of any mining regulations which relate to lands under federal Government jurisdiction can be obtained on application to the Territorial Mining Lands Service, Department of the Interior, Ottawa.

The production of minerals is an important industry in all the provinces of the Dominion of Canada, with the exception of Prince Edward Island, and each province enacts laws and regulations governing the disposal of mining rights and the operations of mines. For information respecting the provincial mining laws, application should be made to the respective provincial departments as follows:—

Alberta.—Department of Lands and Mines, Edmonton.

British Columbia.—Department of Mines, Victoria.

Manitoba.—Department of Mines and Natural Resources, Winnipeg.

New Brunswick.—Department of Lands and Mines, Fredericton.

Nova Scotia.—Department of Public Works and Mines, Halifax.

Ontario.—Department of Mines, Toronto.

Quebec.—Bureau of Mines, Quebec.

Saskatchewan.—Department of Natural Resources and Immigration, Regina.

## 8. GOVERNMENTAL FACILITIES FOR DEALING WITH MINING AND GEOLOGICAL PROBLEMS

With the advancement of mining in Canada, there has grown, particularly in the last decade, a recognition of the value of organized scientific research in solving the many and varied problems which confront the growing industry. In the solving of such problems, the Department of Mines at Ottawa, has, since its inception in 1907, played a leading part. Various provincial Government departments are also contributing in no small measure to the success attained.

### Federal Organizations

In the extremely diversified field of activity in which it operates, the Department of Mines is chiefly concerned with the various scientific and technical phases of mining, milling, and metallurgical operations, and with delimiting, mapping, and directing attention to the mineralized areas of Canada, in assisting the mine operator and metallurgist, in solving the problems continually arising in the business of extracting, milling, and smelting ores, and, through technological research, in the study of methods by means of which the product of the mine may be more efficiently utilized and the market for Canadian mineral products extended.

A brief summary of the various divisions of the Department of Mines mainly concerned in these activities is as follows:—

*Geological Survey*, with geological, palaeontological, mineralogical, topographical and borings divisions—58 parties in the field during 1930—exhaustive series of geological reports and maps issued annually—branch office maintained in Vancouver, B.C.

*Mines Branch*, with fuels and fuel testing, ore dressing and metallurgical, ceramic and road materials, and chemical divisions, each having laboratories fully equipped with modern machinery and apparatus; also a division of mineral resources; Dominion assay office maintained in Vancouver, B.C.

*Explosives Division*—well equipped laboratory.

### Provincial Organizations

*Ontario.*—Department of Mines, Toronto; active in both mining and geological studies; maintaining a permanent staff of geologists and employing many more for special surveys; complete chemical and assay laboratory service available both in Toronto and Cobalt; drilling sponsored by department recently revealed important deposits of lignite in northern Ontario.

*Quebec.*—Bureau of Mines, Quebec; Quebec mining laws recently favourably amended; provincial geological branch recently established to carry out field work and prepare reports and maps.

*New Brunswick.*—Department of Lands and Mines, Fredericton; mining laws of the province recently revised and improved; diamond drill available for loan to reputable mining companies; provincial geologist appointed lately.

*Nova Scotia.*—Department of Public Works and Mines, Halifax; maintains close co-operation with Department of Natural Resources and Provincial Development and local universities in a study of relevant mining problems.

*British Columbia.*—Mines Department, Victoria; appoints a provincial mineralogist; maintains a comprehensive system of Mineral Survey Districts, each with a resident engineer who submits a very complete annual report of all operations in his district.

*Alberta.*—Mines Branch, Edmonton; co-operates with University of Alberta and Scientific and Industrial Research Council of Alberta in a study of mining problems.

*Saskatchewan.*—Department of Natural Resources and Immigration, Regina; co-operates with University of Saskatchewan in a study of mining problems and maintains a provincial geologist.

*Manitoba.*—Department of Mines and Natural Resources, Winnipeg; recently created to promote mining and other resources development in the province; appoints a commissioner of mines.



THE CANADIAN INDUSTRIAL FIELD

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CHAPTER XI

THE FORESTS AND FOREST PRODUCTS  
INDUSTRY OF CANADA

Prepared by the Forest Service, Department of the Interior



Issued by  
THE NATIONAL DEVELOPMENT BUREAU  
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and  
THE DEPARTMENT OF TRADE AND COMMERCE

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Preliminary Edition



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## THE FORESTS AND FOREST PRODUCTS INDUSTRY OF CANADA

### 1. FORESTS

The forest industries of Canada are second in importance only to agriculture in value of production and exports and no other single group of industries have been of greater importance in stimulating commercial growth. The pulp and paper industry has become Canada's largest manufacturing industry while the lumber industry proper, if we include lumber processing plants, such as planing mills, sash and door, box and furniture factories, ranks second among the great industries of the Dominion.

In 1928 the capital invested in the pulp and paper industry was \$685,687,459, in the lumber industry \$175,729,448, in lumber processing plants \$51,361,000, and in woods operations \$172,000,000. The addition of some minor industries depending primarily on the forests brings the total capital invested to \$1,100,000,000.

The total area covered by forests at present in Canada, including the forested agricultural lands has been estimated at 1,151,454 square miles, of which 17·3 per cent carries mature merchantable timber, 9·7 per cent carries immature but nevertheless merchantable forest products, and 48·2 per cent consists of accessible young growth which will eventually be merchantable. The remaining 24·8 per cent is inaccessible or unprofitable under present conditions.

Physiographic, climatic and soil conditions of Canada seem generally to favour the coniferous type of forest. While sections of Eastern Canada have supported a heavy growth of hardwoods, the greater part of Canada's forest area is covered with spruce, pines, balsam, Douglas fir and other coniferous softwoods. Three main groups of forest growth in Canada may be identified with the three main physiographic divisions, the Cordilleran (corresponding to the Rocky Mountains and Pacific slope), the Great Plains, and the Atlantic slope, including the St. Lawrence basin.

The Cordilleran forest contains over two thirds of the saw timber of Canada, a great part of this timber being located on Vancouver Island and the mainland opposite. It is almost entirely coniferous, the outstanding commercial species being Douglas fir, the most important Canadian structural timber, western red cedar

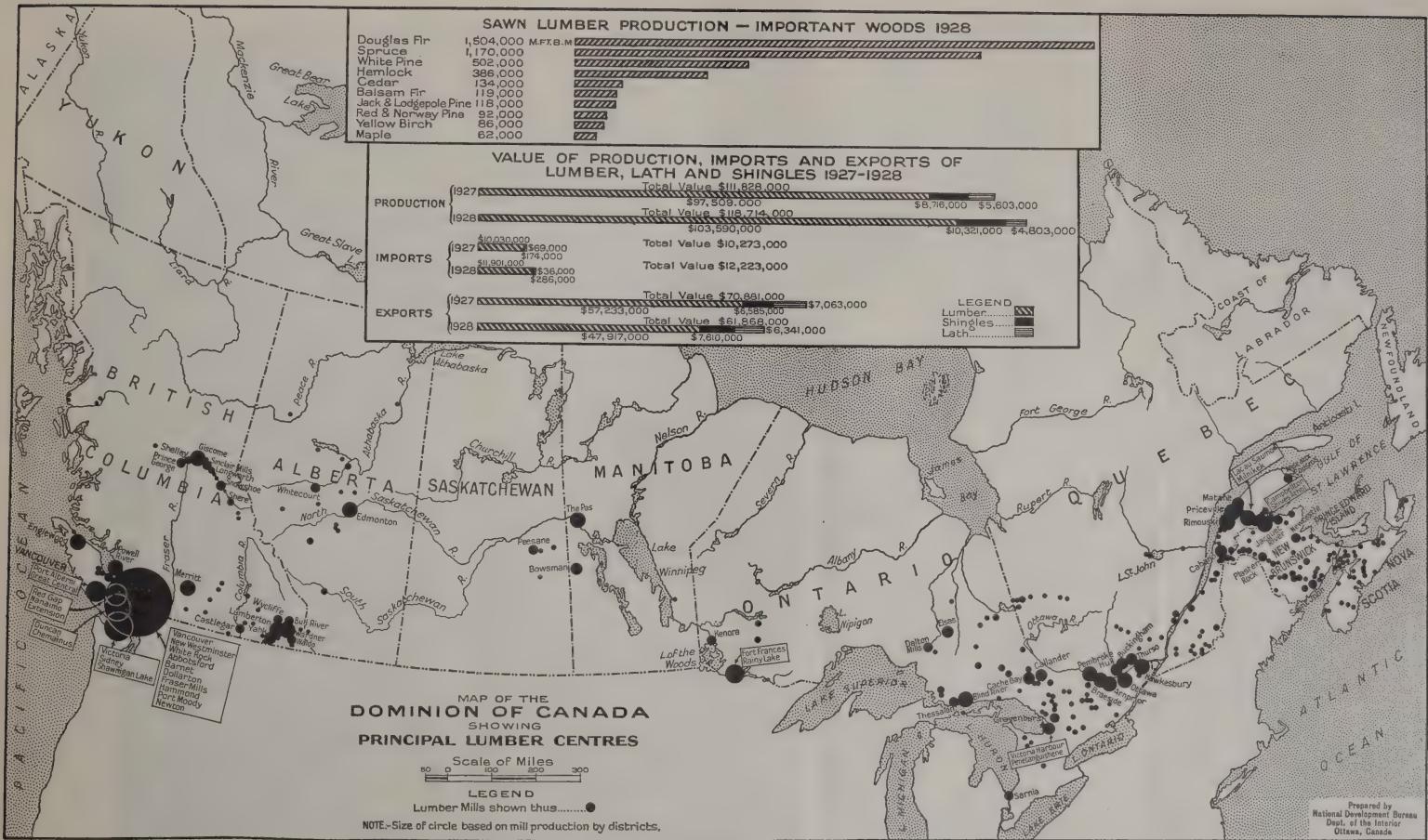
from which the western shingle is manufactured, Engelmann and Sitka spruce, balsam, hemlock, western white and western yellow pine, western larch and yellow cypress. Owing to rugged topography and variations in elevation and consequently in conditions of humidity, forest types vary considerably within the zone, but the mild and humid climate of the area, coupled with high precipitation of the coastal zone, gives this region the most luxuriant forest growth of any section of Canada, heavy stands of timber extending from sea level up to elevations of 3,500 to 4,000 feet.

The commercial forests of the Prairie Provinces are confined to what is known as the Northern Forest Belt, a timbered strip 300 to 400 miles in width, which extends from Alaska to Labrador, covering the northern part of the Prairie Provinces and extending northward as far as the limit of commercial tree growth. White spruce, black spruce, jackpine, balsam, larch and poplar are the principal commercial trees. While enormous areas have been burned over, these central forests still constitute an important timber resource.

The eastern forests still remain the centre of the most intense forest exploitation, particularly in late years in the pulpwood field. The forest types in this region vary with soil and climatic conditions. White pine, spruce, hemlock, and red pine are the principal species devoted to lumber and structural timber, spruce and balsam are the principal pulpwood species, a tremendous quantity of jackpine is cut for railway ties and it is also used to some extent for lumber and pulp. Eastern cedar is also an important wood. Eastern Canada is the source of practically all the hardwoods produced—yellow birch, maple, elm, basswood, ash, and beech being the principal species. Much of the eastern forest consists of mixed hardwood and softwood types.

#### Ownership of Forests

In Canada the general policy of both the federal Government and the provincial Governments has been to dispose of the timber by means of licences to cut, rather than to sell timberland outright. Under this system the State retains the ownership of the land and control of the cutting operations. Revenue is derived in the form of





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## THE FOREST INDUSTRY OF CANADA

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stumpage bonuses (either in lump sums or in payments made as the timber is cut), annual ground rent, and royalty dues collected as and when the wood is removed. Both ground rent and royalty dues may be adjusted at the discretion of the Governments so that the public may share in any increase in stumpage values, or, as has happened, reductions may be made in the rates if conditions demand them.

The Maritime Provinces did not adopt this policy to the same extent as did the rest of Canada. In Prince Edward Island all the forest land has been alienated and is in small holdings, chiefly farmers' woodlots. In Nova Scotia 76 per cent of the forest land is privately owned. Nearly half of this is in holdings exceeding 1,000 acres. In New Brunswick nearly 50 per cent has been sold, and 20 per cent is in holdings exceeding 1,000 acres. The percentage of privately owned forest land in the other provinces is as follows:— Quebec, 7 per cent; Ontario, 3·3 per cent; Manitoba, 11·3 per cent; Saskatchewan, 10·4 per cent; Alberta, 15·7 per cent, and British Columbia, 13 per cent.

In Canada, as a whole, only 9·6 per cent of the forest land has been permanently alienated; on 13·2 per cent cutting rights are held under lease or licence, and 77·2 per cent is not alienated in any form. Only 6·6 per cent has been permanently dedicated to forest production. This includes the former (federal) national forests, and provincial forests reserves and parks in which utilization is permitted. There are licensed berths within these reserved areas. About 92·7 per cent of the State-owned forest land has not yet been withdrawn from sale or settlement and definitely set aside for forestry purposes.

Naturally, the more heavily timbered and accessible tracts have been alienated, so that on the basis of total timber content, it is estimated that about 10 per cent of the forest resources of the Dominion is in private ownership, 40 per cent under licence or lease, and 50 per cent still unalienated.

The total stand of timber in Canada was estimated in 1928 to be approximately 224,304 million cubic feet, of which 177,362 million cubic feet was of coniferous species and 46,942 million cubic feet was of broad leaved species.

# THE CANADIAN INDUSTRIAL FIELD

## FOREST AREA BY OWNERSHIP

| Type of forest                       | Forests owned by the State     |                        |                |                | Forests owned by corporate bodies and private individuals | Total          |
|--------------------------------------|--------------------------------|------------------------|----------------|----------------|---|----------------|
|                                      | Dedicated to timber production | Under lease or license | Unalienated    | Total State    |   |                |
|                                      | (1)<br>sq. mi.                 | (2)<br>sq. mi.         | (3)<br>sq. mi. | (4)<br>sq. mi. | (5)<br>sq. mi.  | (6)<br>sq. mi. |
| Accessible—                          |                                |                        |                |                |   |                |
| Merchantable.....                    | 23,000                         | 100,000                | 161,234        | 261,234        | 50,000  | 311,234        |
| Young growth.....                    | 43,500                         | 35,000                 | 469,646        | 504,646        | 50,000  | 554,646        |
| Inaccessible and unprofitable.....   | 9,545                          | 17,341                 | 258,168        | 275,509        | 10,065  | 285,574        |
| Total.....                           | 76,045                         | 152,341                | 889,048        | 1,041,389      | 110,065   | 1,151,454      |
| Percentage of total forest area..... | 6.6                            | 13.2                   | 77.2           | 90.4           | 9.6   | .....          |

NOTE.—State forest land not definitely dedicated to timber production may be calculated by subtracting 1 and 4.

## 2. STAND OF TIMBER

The following tabulations show the estimated total stand of timber of merchantable size by species and by regions:

### ESTIMATE OF THE TOTAL STAND OF TIMBER OF MERCHANTABLE SIZE IN CANADA, BY SPECIES

|                          | Saw material      | Small material | Total equivalent in standing timber |
|--------------------------|-------------------|----------------|-------------------------------------|
|                          |                   |                |                                     |
|                          | Million feet b.m. | Thousand cords | Million cu. ft.                     |
| Conifers—                |                   |                |                                     |
| Spruce.....              | 98,174            | 341,880        | 61,500                              |
| Jack Pine.....           | 17,351            | 215,385        | 29,000                              |
| Balsam Fir.....          | 36,530            | 136,752        | 24,000                              |
| Cedar.....               | 78,411            | 33,633         | 21,107                              |
| Hemlock.....             | 53,425            | 8,975          | 12,750                              |
| Douglas Fir.....         | 68,886            | 3,205          | 15,461                              |
| White Pine.....          | 15,183            | 37,803         | 7,784                               |
| Red Pine.....            | 3,690             | 13,748         | 2,416                               |
| Larch.....               | 3,146             | 5,957          | 1,386                               |
| Yellow Cypress.....      | 4,000             | 1,000          | 993                                 |
| Western Yellow Pine..... | 3,881             | 983            | 965                                 |
| Total.....               | 382,677           | 799,321        | 177,362                             |
| Broad-leaved—            |                   |                |                                     |
| Poplar.....              | 15,981            | 226,496        | 30,000                              |
| White Birch.....         | 5,342             | 47,256         | 6,699                               |
| Yellow Birch.....        | 9,817             | 21,367         | 4,650                               |
| Maple.....               | 5,818             | 15,639         | 3,104                               |
| Beech.....               | 1,772             | 5,150          | 990                                 |
| Basswood.....            | 964               | 2,495          | 503                                 |
| Elm.....                 | 798               | 1,975          | 406                                 |
| Ash.....                 | 521               | 1,781          | 322                                 |
| Cottonwood.....          | 776               | .....          | 170                                 |
| Oak.....                 | 171               | 472            | 93                                  |
| Red Alder.....           | .....             | 41             | 5                                   |
| Total.....               | 41,960            | 322,672        | 46,942                              |
| Grand total.....         | 424,637           | 1,121,993      | 224,304                             |

## THE FOREST INDUSTRY OF CANADA

ESTIMATE OF TOTAL STAND OF TIMBER OF MERCHANTABLE SIZE IN CANADA BY REGIONS

| —                      | Conifers          |                     |                                     | Broad-leaved      |                     |                                     | Total             |                     |                                     |
|------------------------|-------------------|---------------------|-------------------------------------|-------------------|---------------------|-------------------------------------|-------------------|---------------------|-------------------------------------|
|                        | Saw material      | Small material      | Total equivalent in standing timber | Saw material      | Small material      | Total equivalent in standing timber | Saw material      | Small material      | Total equivalent in standing timber |
|                        | Million feet b.m. | Thousands and cords | Million ft. cu. ft.                 | Million feet b.m. | Thousands and cords | Million cubic feet                  | Million feet b.m. | Thousands and cords | Million cu. ft.                     |
| Eastern Provinces..... | 45,193            | 476,322             | 65,622                              | 31,845            | 160,995             | 25,811                              | 77,038            | 637,317             | 91,473                              |
| Prairie Provinces..... | 17,484            | 275,564             | 36,070                              | 9,338             | 159,921             | 20,756                              | 26,822            | 435,485             | 56,826                              |
| British Columbia.....  | 320,000           | 47,435              | 75,630                              | 777               | 1,756               | 375                                 | 320,777           | 49,191              | 76,005                              |
| Total.....             | 382,677           | 799,321             | 177,362                             | 41,960            | 322,672             | 46,942                              | 424,637           | 1,121,993           | 224,304                             |

Though the quantity of timber used in the lumber industry has not been increased appreciably in the last decade, the consumption of pulpwood has doubled and the use of ties, poles and similar products continues to increase with the growth of population and the development of the country. Canada is now exporting annually to the United States the equivalent of more than 1,000 million cubic feet and there is every reason to expect an increasing demand on the forests of Canada to supply the growing needs of that country, especially for pulp and paper.

In a report to the United States Senate, the Secretary of Agriculture said: "Three fifths of the original timber of the United States is gone and we are using timber four times as fast as we are growing it. The forests remaining are so localized as greatly to reduce their national utility. The bulk of the population and manufacturing industries of the United States are dependent upon distant supplies of timber as a result of the depletion of the principal forest areas east of the Great Plains."

The United States market absorbs all of Canada's pulpwood exports and over 87 per cent of her pulp and paper shipments. The remaining portion goes to the United Kingdom and other widely distributed overseas markets. Forty-one per cent of the paper consumed in the United States is either of Canadian manufacture or is made of wood or pulpwood imported from Canada. Canada is the principal source of coniferous timber within the British Empire and her exports to other parts of the Empire and to the Orient and South America are rapidly increasing.

## THE CANADIAN INDUSTRIAL FIELD

### 3. PRODUCTS OF WOODS OPERATIONS

PRODUCTS OF WOODS OPERATIONS, IN CANADA, BY CHIEF PRODUCTS, 1928

| Products                           | Unit of measure used | Quantity reported or estimated | Converting factor | Equivalent volume in standing timber | Total value |
|------------------------------------|----------------------|--------------------------------|-------------------|--------------------------------------|-------------|
| Logs and bolts, sawn*              | M ft. b.m.           | 4,722,845                      | 219               | cu. ft.                              | \$          |
| Pulpwood used.....                 | cords                | 4,796,320                      | 117               | 1,034,303,055                        | 71,824,195  |
| Pulpwood exported.....             | "                    | 1,532,266                      | 117               | 561,169,440                          | 59,578,417  |
| Firewood.....                      | "                    | 9,541,267                      | 95                | 179,275,122                          | 15,269,660  |
| Hewn railway ties.....             | No.                  | 8,253,575                      | 12                | 906,420,365                          | 41,164,270  |
| Logs exported.....                 | M ft. b.m.           | 330,376                        | 219               | 99,042,900                           | 5,871,724   |
| Square timber.....                 | "                    | 177,579                        | 219               | 72,352,344                           | 4,607,286   |
| Telegraph and telephone poles..... | No.                  | 1,330,651                      | 13                | 38,889,801                           | 3,772,137   |
| Round mining timber.....           | cu. ft.              | 5,634,590                      | 1.3               | 14,698,463                           | 4,934,371   |
| Fence posts.....                   | No.                  | 15,690,978                     | 2                 | 7,324,967                            | 998,146     |
| Wood for distillation.....         | cords                | 52,559                         | 123               | 31,381,956                           | 1,506,050   |
| Fence rails.....                   | No.                  | 5,421,327                      | 2                 | 6,464,757                            | 476,726     |
| Miscellaneous products.....        | cords                | 219,038                        | 117               | 10,842,654                           | 463,469     |
| Total.....                         |                      |                                |                   | 2,988,038,430                        | 212,950,799 |

\*Includes sawn ties.

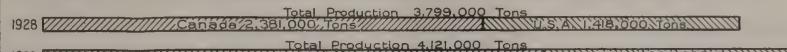
According to the latest available statistics there are 3,977 industrial establishments in Canada that depend primarily on the wood and paper industries for their raw materials.

The manufacture from Canadian spruce of silk of a quality in many respects superior to the product of the silk worm, the production of linoleum, dynamite and gramophone records, the operation of sawmills having a capacity of half-a-million feet board measure in ten hours; the production of newsprint paper in a continuous sheet over twenty-two feet wide at the rate of over half an acre a minute from a single machine; these are a few of the developments of the forest industries of Canada that could hardly have been foreseen a few years ago.

### 4. FOREST ADMINISTRATION

The Dominion Government, until 1930 administered the Crown lands in the provinces of Manitoba, Saskatchewan, Alberta, in certain areas of British Columbia and in the Yukon and Northwest Territories. As a result of the transfer of natural resources, control

### PRODUCTION OF NEWSPRINT IN CANADA AND UNITED STATES 1928-1929



### EXPORTS OF NEWSPRINT FROM CANADA

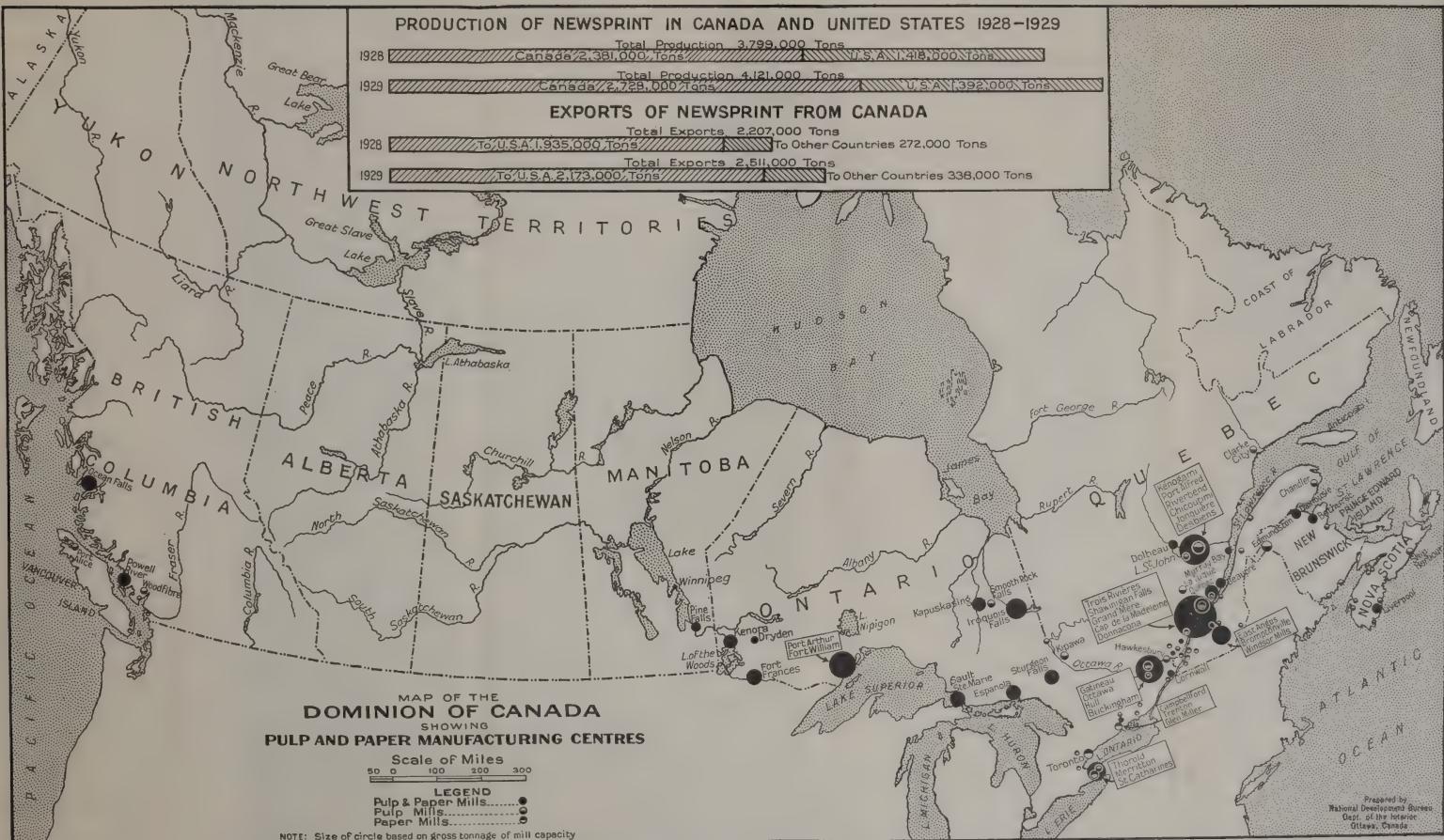


### MAP OF THE DOMINION OF CANADA SHOWING PULP AND PAPER MANUFACTURING CENTRES

Scale of Miles  
50 0 100 200 300

LEGEND  
Pulp & Paper Mills.....●  
Pulp Mills.....○  
Paper Mills.....■

NOTE: Size of circle based on gross tonnage of mill capacity



Prepared by  
National Development Bureau  
Dept. of the Interior  
Ottawa, Canada



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## THE FOREST INDUSTRY OF CANADA

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of these lands has passed to the western provinces, the Dominion retaining authority only in the Northwest Territories and Yukon where forest administration is a function of the Northwest Territories Branch of the Department of the Interior.

The Forest Service, Department of the Interior, continues to function in forest and forest products research, occupying a field in forestry similar to that of the Departments of Agriculture and Mines in the fields of agriculture and mining respectively. Forest research stations are maintained to study rates and conditions of growth of Canadian timbers and to develop proper plans of management, and forest products laboratories at Ottawa, Montreal and Vancouver investigate the technical qualities of Canadian woods, manufacturing methods, wood preservation and other problems connected with utilization of the forest resources. The Montreal laboratory is devoted to research in problems affecting the pulp and paper industry.

The Forest Service and the provinces are conducting co-operatively a comprehensive inventory of the forest resources of the Dominion. The Forest Service, as a special contribution to this project is undertaking a nation-wide survey of the reproduction and rate of growth of the main timber species, from which it will be possible to secure data basic to the development of proper management plans.

Other Forest Service functions include the distribution of tree-planting stock to farmers in the prairie sections of the western provinces, special investigations into the causes and rate of spread of forest fires, and meteorological and other conditions affecting the same. The Service also serves as a clearing house for information regarding the forest resources of the Dominion, manufacture of and trade in forest products, besides acting in an advisory capacity to the Dominion Government in matters pertaining to the conservation and development of the forest resources.

### **British Columbia**

The Department of Lands, under the Minister of Lands and the Deputy Minister of that department, administer the natural

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## THE CANADIAN INDUSTRIAL FIELD

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resources of this province in connection with provincial land, forest and water. The Forest Branch, as a part of this department, is the forest authority of the province.

The above organization at Victoria has under its direction a permanent staff of nearly 200 scattered throughout the six forest districts into which the province has been divided for the purpose of administration. Each district is in charge of a District Forester and an Assistant District Forester, under whom works a staff of rangers; patrolmen and lookout men are employed in addition.

The main efforts of the Forest Branch have been directed towards the protection of the forests from fire and the business administration of the forests, but research work is now being conducted as funds and trained men become available.

The British Columbia Land Act and amendments provides for the sale of land and the disposal of timber under leases and licences to cut. Though it originally stated that "no land chiefly available for timber shall be disposed of by public or private sale," it was not until 1896, when timberland was specifically defined as land carrying 8,000 feet board measure per acre when situated on the coast and 5,000 feet board measure in the interior, that this policy was enforced.

The British Columbia Forest Act, 1912, established the Forest Branch in the Department of Lands and placed under its jurisdiction the entire administration of the forests, including the disposal of timber, collection of revenue, regulations of cutting, forest protection, reforestation, and market extension.

The British Columbia Taxation Act imposes a tax of  $1\frac{1}{2}$  per cent on the assessed valuation of privately owned timberland, carrying over 8,000 board feet per acre west of the Cascades and 5,000 feet east of that range.

### SUMMARY OF PRESENT CONDITIONS OF TENURE

*Crown Grants.*—Timber cut from land granted prior to April 7, 1887, is free of royalty. Timberlands purchased subsequent to that date and prior to March 12, 1906, are subject to a royalty of 50 cents per thousand feet board measure, and the logs may be exported without charge. Lands granted after March 12, 1906, till March 1,

1914, are subject to a royalty of 50 cents per thousand feet board measure, and the logs are not exportable. Timber cut from lands granted since March 1, 1914, is subject to the same royalty as special licences and must be manufactured in the province.

*Timber Leases.*—The leasing system goes back as far as 1870. The leases were originally for a term of 21 years, renewable under conditions to be determined by the Government. They are now all on the same terms as special licences.

*Pulp Leases.*—In 1901, provision was made for granting leases to pulp and paper companies, which were renewable for consecutive periods of 21 years. The annual rental is one-half the rental on special licences and the royalty 25 cents per cord (700 feet board measure, or 100 cubic feet).

*Special Licences.*—Most of the alienated timber is held under special licences, which are limited to 640 acres each. They are renewable annually in perpetuity, subject to cutting regulations in force from year to year. After cutting, the licence lapses, or renewal may be refused if the land is required for agriculture. An annual ground-rent of \$140 per square mile is charged west of the Coast-Cascade mountains and \$100 per square mile east of that range. The scale of royalty is adjusted at intervals of five years, and, in the case of logs, it varies as to whether on the coast or in the interior and as to the species and quality. Other products, such as ties, poles, pulpwood, etc., carry individual rates.

*Timber Sales.*—Since 1908, Crown timber has been disposed of only by timber sales, which are awarded after public competition to the one bidding the highest stumpage price. Each sale contract specifies the period within which operations are required to be completed. The ground-rent is the same as on special licences.

*Manufacturers of Crown Timber.*—In order to encourage home manufacture, the exportation of raw material, logs, bolts, poles, piling, etc., cut from private lands granted subsequent to March 12, 1906, and from all Crown lands (leases, licences, and timber sales) is prohibited, except under special permit and the payment of an

export tax. To assist the Government in regulating export, an Advisory Committee representing equally the logging industry, the lumber manufacturers, and the Forest Service meets each month to review the situation and pass on the applications for export permits.

*Forest Protection Fund.*—All alienated Crown lands and privately owned lands classified and taxed as timberlands under the Taxation Act are required to contribute towards the Forest Protection Fund. The present tax is  $2\frac{1}{2}$  cents per acre per annum. The Government contributes an additional \$300,000 annually. The fund is administered by the Forest Branch exclusively for forest fire protection.

*Timber Measurement.*—All timber for which a royalty is payable is scaled and graded by government scalers. A small fee which pays for this service is charged.

#### Ontario

Forest administration is carried out through the Department of Lands and Forests, the Timber Administration Branch controlling timber sales; and the Forestry Branch having charge of reforestation, protection, air service, forest surveys, and investigations.

*Timber Sales.*—The administration of timber sales under the Deputy Minister of Lands and Forests, involves preparation of estimates for sales, inspection of logging operations, measurement of timber for collection of dues, trespass, and adjusting settlers' timber rights.

The permanent field staff consists of 12 Crown Timber Agents with 24 forest rangers. The temporary field staff consists of 150 scalers and forest rangers. Timber scalers receive licences after passing Government examinations.

The Crown Timber Act, with the regulations made thereunder, controls in such matters as conditions governing disposal, cutting, scaling, collection, trespass, distress proceedings, manufacture, etc.

The sale of saw-timber is by tender after examination, and public advertisement for 60 to 90 days of the terms and conditions applying to the particular sale. These contain, besides subjection

to the usual regulations, clauses stating a definite removal period, stipulating the disposal of all slash about camps and dumps, along "tote" roads and railways and such other points as the department may require, and requiring a cash deposit until cutting is completed, to ensure fulfilment of contract.

The successful tenderer is the person who offers to pay the highest bonus per product unit in excess of the set rates of Crown dues. There is also a ground rental charge of \$5 and a fire tax charge of \$6.40 annually per square mile. These rates and charges are subject to change by Order in Council, but are always fixed for a definite period—10, or lately, 5 years—in order to give stability to the lumber business.

The licence to cut is granted for one year only, with the right of renewal if the observance of the regulations is satisfactory.

The sale of pulpwood areas is by individual agreements, good for 21 years. These agreements stipulate a minimum mill capacity, cost, number of persons employed, and miscellaneous conditions according to the area concerned.

The payment of Crown dues is based on measurement in the woods by Government scalers, half of whose wages is collected from the licensee.

Since 1897, all softwood timber cut from Crown lands has had to be manufactured in Canada, all pulpwood since 1900, and all hardwood since 1926.

The Mills Licensing Act provides for the requirement of securing a licence to operate sawmills or pulp and paper mills, and provides also for the Government control of locating mills and prescribing the returns to be made as to sources of supply of raw material and quantities used therein.

The Timber Cutting Regulation Act provides power for the Minister of Lands and Forests to fix the size and kind of trees and timber which may be cut from Crown lands and on patented lands where the timber thereon remains the property of the Crown.

The Assessment Act provides for the exemption of woodlands from taxation up to 10 per cent of the owners holdings and not exceeding twenty acres for any single owner. The owner is required to make application for such exemption.

### Quebec

The Department of Lands and Forests of the provincial Government administers the timber in the province. In 1909, a Forest Service was created in this department and given charge of the timber-lands and matters relating to forestry. It is organized under the Chief of the Forest Service and the Assistant Chief.

The laws respecting lands and forests and the timber regulations in the Revised Statutes of Quebec, 1925, place the administration of the forests under the Forest Service of the Department of Lands and Forests. This included the classification of the land, disposal of timber, regulations of cutting operations, measurement of timber cut, collection of revenue, reforestation, and all other matters pertaining to the forests. Forest fire protection is under a special Forest Protection Service.

Licences to cut timber are disposed of by public competition to the bidder of the highest stumpage bonus in excess of an upset price and the regular royalty on timber cut. The successful tenderer must also pay an adjudication price per square mile, which is fixed for each licence. An annual ground rental of \$8 per square mile is also charged. Licences are renewable from year to year, but the rate of royalty and of ground rent may be changed by the Government at any time. The export of unmanufactured wood from Crown lands is prohibited. The timber cut is measured by licenced scalers, and operators by whom they are employed are required to make returns of the amounts. Minimum diameter limits to which the timber may be cut are fixed, but modifications are allowed when working plans acceptable to the Forest Service show that such are necessary for the best silvicultural practice. Proposed cutting areas and logging operations are inspected by the forest engineers

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of the Service, and when deemed advisable the amount to be cut is prescribed. It is the aim of the department to limit the cut to 80 per cent of the increment.

Special efforts have been made toward ensuring a more conservative utilization of the exploited timber and reducing waste in the course of lumber operations. Regulations call for detailed inventories being made by all limit-holders by the end of 1930. Since 1922, forest surveys have been completed on 20,000 square miles.

Land may be reserved for forestry by order of the Lieutenant Governor in Council in the form of forest reserves, Crown forests, or township forest reserves. Provincial parks are established under special legislation.

### New Brunswick

The forest administration is under the Minister of Lands and Mines.

The administration of land and timber was originally provided for by the Crown Lands Act. Subsequently the Forest Act, 1918, the Scalers Act, the Forest Service Act, and the Forest Fires Act were passed and are embodied in the Revised Statutes of New Brunswick, 1927.

*Private Lands.*—All private forest land in tracts of 500 acres or more in area, is subject to a wild land tax of 2 cents per acre. In Westmorland County all private timberland of 50 acres or more is taxed for fire protection, the rate being based on the cost of the service. In other counties, the owners are required to extinguish fires on their own land, and if they fail to do so, the municipality is required to act and the owner of the land has to pay all the costs.

*Leases.*—Cutting rights are granted under annually renewable term licences disposed of by public auction. They are subject to a bonus varying from \$20 to \$100 per square mile for sawmill licences and up to \$130 per square mile for pulpwood licences. The sawmill licence term is 30 years and the pulp licence 50 years. An annual rental of \$8 per square mile is charged, and a royalty is payable as the timber is cut. Regulations regarding the stumpage rates,

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methods of cutting, and measurement of timber may be revised, from time to time, by the Lieutenant Governor in Council.

The Minister may require the holder of any licence to furnish maps and estimates of the timber for his licence.

The timber cut from Crown lands must be measured by licensed scalers, and sworn returns made to the Government.

The Act stipulates that all logs, timber or wood, except poplar, cut from Crown lands must be manufactured within Canada into merchantable pulp or paper or into sawn lumber, woodenware utensils, or other articles of commerce or merchandise, but an amendment provides that the licensees may be granted the privilege of exporting raw material when it is shown to be in the public interest, after full inquiry into all the circumstances of each case, under such conditions and stipulations as the Lieutenant Governor in Council may deem just and equitable.

### Nova Scotia

The Attorney General of the province is also the Minister of Lands and Forests, and he is responsible for the management, leasing, sale, or other disposition of the Crown lands, the surveying and recording of all forest and wild lands, the conservation and protection of all forest and timber lands, whether the same are Crown lands or privately owned, and the protection, preservation, and propagation of game and game fish.

Under the Minister, the Chief Forester has charge of forest regeneration, protection, surveying and scaling.

All provincial legislation regarding the forest and game is governed by the Nova Scotia Lands and Forests Act passed in 1926.

*Cutting Licences.*—The Minister of Lands and Forests may grant licences to cut timber on the ungranted land of the Crown, on payment of such dues as may be in his discretion. The cutting licences are subject to regulations and restrictions prescribed by the Governor in Council.

### Summary of Administrative Methods

In general, the system of granting cutting licences rather than selling the timberland outright has been followed by all the forest authorities; only in the Maritime Provinces has any large proportion of the forest land been permanently alienated. By the licence system, the Crown retains the ownership of the land and control of the cutting operations and derives revenue in the form of ground rent, stumpage bonuses, and royalty on the timber cut. Most of the licences are renewable annually at the discretion of the Government and on such terms as may be fixed from time to time, though some are fixed for a definite period. In practice, however, the regulations are changed infrequently and only when justified by the conditions of the timber-using industries.

### Fire Protection

The protection of the forests from fire is perhaps the most important function of each of the forest administrations in the Dominion. Each service maintains a permanent fire protective organization which is supplemented by temporary rangers and patrolmen during the hazardous season. Systems of lookout towers, telephone lines and transportation routes and equipment have been established throughout practically all of the commercially accessible timber land and in the more remote areas there is more extensive system of patrol. During recent years aircraft have been used extensively, both for detection of fires and for transporting men and equipment for suppression. The abundance of lakes in a great part of the forested region makes it possible to use seaplanes to advantage. Portable gasoline pumps and hand pumps are an important part of the equipment of every service.

A closed season is fixed during which the setting of fire without a permit except for cooking or camping purposes is prohibited by law. In several of the provinces permits to travel in the forest are required during the closed season.

As a general rule the timber holders contribute towards the expense of fire protection. In Quebec they are required to furnish

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protection to the timber on their limits and for this purpose have formed local associations which operate on a co-operative basis under the supervision of the provincial Protection Service.

The railways are required by the Board of Railway Commissioners to maintain effective patrol and to extinguish fires along their rights-of-way and as a result the railways are a very minor cause of forest fire losses in Canada.



